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Twelfth Annual Register.

The State Agricultural College,

Fort Collins, Colorado.

1890-~~91~~. 95

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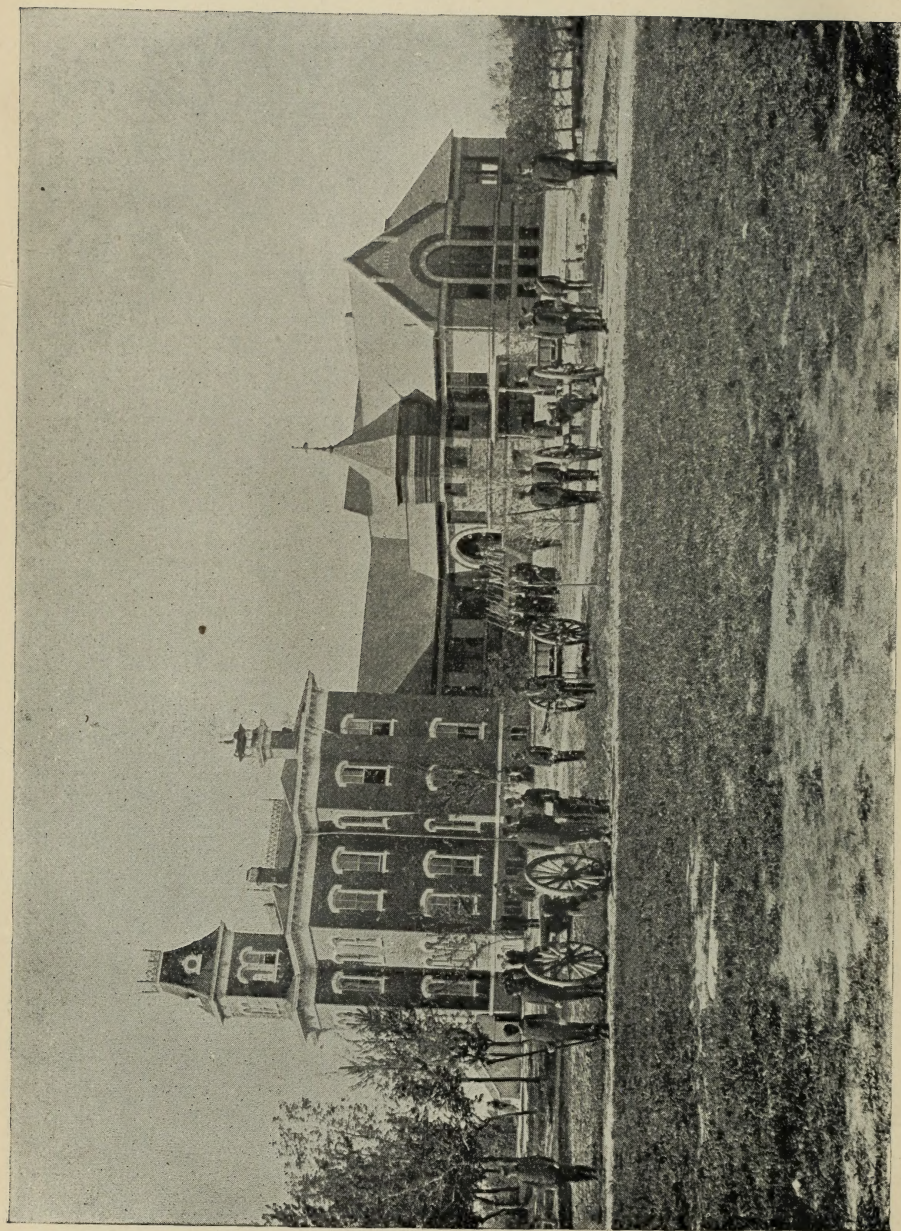
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REGISTER LIBRARY
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OFFICERS AND STUDENTS

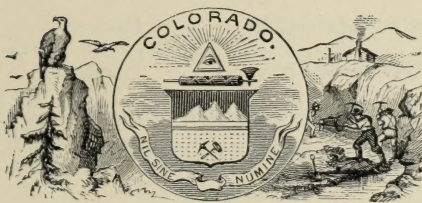
AND

COURSES OF INSTRUCTION

IN THE

STATE AGRICULTURAL COLLEGE

FORT COLLINS, COLORADO.



1890-91,

FORT COLLINS, COLORADO :
THE COURIER PRINTING & PUBLISHING Co..
1891.

K

The State Board of Agriculture.

				TERM EXPIRES.
HON. B. S. LaGRANGE,	-	-	Greeley,	- - - 1899
HON. JAMES E. DuBOIS,	-	-	Fort Collins,	- - - 1899
HON. A. L. EMIGH,	-	-	Fort Collins,	- - - 1897
HON. JOHN J. RYAN,	-	-	Loveland,	- - - 1897
HON. FRANK J. ANNIS,	-	-	Fort Collins,	- - - 1895
HON. CHARLES H. SMALL,	-	-	Pueblo,	- - - 1895
HON. R. A. SOUTHWORTH,	-	-	Denver,	- - - 1893
HON. GEORGE WYMAN,	-	-	Longmont,	- - - 1893
HIS EXCELLENCY GOV. JOHN L. ROUTT,	} <i>ex-officio.</i>			
PRESIDENT CHARLES L. INGERSOLL,				

Officers of the Board.

HON. GEORGE WYMAN,	- - - - -	President
HON. FRANK J. ANNIS,	- - - - -	Secretary
HON. FRANKLIN C. AVERY,	- - - - -	Treasurer

Committees.

EXECUTIVE.

J. J. Ryan.	B. S. LaGrange.	George Wyman.
The President of the College, The Secretary of the Board and Faculty,		{ <i>ex-officio</i> .

FINANCE.

J. J. Ryan.	C. H. Small.	J. E. DuBois.
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FARM AND STOCK.

B. S. LaGrange.	A. L. Emigh.	J. J. Ryan.
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FACULTY, LIBRARY AND COURSE OF STUDY.

C. L. Ingersoll.	F. J. Annis.	R. A. Southworth.
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BOTANY, HORTICULTURE AND ENTOMOLOGY.

A. L. Emigh.	F. J. Annis.	J. E. DuBois.
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MATHEMATICS, ENGINEERING AND MILITARY SCIENCE.

R. A. Southworth.	B. S. LaGrange.	A. L. Emigh.
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MECHANICS AND CHEMISTRY.

J. E. DuBois.	C. H. Small.	R. A. Southworth.
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COLLEGE BUILDINGS AND PERMANENT IMPROVEMENTS.

C. H. Small.	B. S. LaGrange.	F. J. Annis.
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Faculty of Instruction.

IN THE ORDER OF OFFICIAL SENIORITY.

- * _____,
President, Professor of Political Economy and Logic.
- JAMES W. LAWRENCE, B. S.,
Acting President, Professor of Mechanics and Drawing.
- MAUD BELL,
Professor of History, Literature and Languages.
- DAVID O'BRINE, E. M., D. Sc., M. D.,
Professor of Chemistry and Geology.
- LOUIS G. CARPENTER, M. S.,
Professor of Physics and Irrigation Engineering.
- CHARLES S. CRANDALL, M. S.,
Professor of Botany and Horticulture.
- JOHN C. DENT, CAPT., 20TH INFANTRY, U. S. ARMY,
Professor of Military Science and Tactics.
- CLARENCE P. GILLETTE, M. S.,
Professor of Zoology and Entomology.
- WALTER J. QUICK, B. S.,
Professor of Agriculture.
- GRACE PATTON, B. S.,
Professor of English and Stenography.
- WILLIAM J. MEYERS, B. S.,
Professor of Mathematics.
- MABELLE B. BIGGART, B. O.,
Special Instructor in Elocution.
- FRANK J. ANNIS, M. S.,
Secretary of Faculty.
- LERAH G. STRATTON, B. S.,
Librarian.

CHANGES:

*CHARLES L. INGERSOLL, M. S., resigned May 15, 1891.

VASA E. STOLBRAND, Professor of Mathematics, resigned July 1, 1891.

The State Experiment Station.

BOARD OF CONTROL :

THE STATE BOARD OF AGRICULTURE.

THE EXECUTIVE COMMITTEE IN CHARGE :

HON. JOHN J. RYAN.

HON. B. S. LAGRANGE.

HON. GEORGE WYMAN.

The President of the College and the Secretary of the
Board and Faculty.

THE STATION COUNCIL:

* C. L. INGERSOLL, M. S.,	- - - -	DIRECTOR
F. J. ANNIS, M. S.,	- - - -	SECRETARY
F. C. AVERY,	- - - -	TREASURER
W. J. QUICK, B. S.,	- - - -	AGRICULTURIST
C. S. CRANDALL, M. S.,	- BOTANIST AND	HORTICULTURIST
D. O'BRINE, E. M., D. Sc., M. D.,	- - - -	CHEMIST
L. G. CARPENTER, M. S.,	- - - -	
- - - -	METEOROLOGIST AND	IRRIGATION ENGINEER
C. P. GILLETTE, M. S.,	- - - -	ENTOMOLOGIST

ASSISTANTS:

† R. H. McDOWELL, B. S.,	- - - -	AGRICULTURE
C. M. BROSE,	- - - -	HORTICULTURE
‡ H. L. SABSOVICH,	- - - -	CHEMISTRY
NICOLAI ANDERSEN,	- - - -	CHEMISTRY
§ B. C. BUFFUM, B. S.,	- - - -	METEOROLOGY
R. E. TRIMBLE, B. S.,	- - - -	METEOROLOGY

SUB-STATIONS:

HARVEY H. GRIFFIN, B. S.,	- - - -	SUPERINTENDENT
San Luis Valley Station, Monte Vista, Colorado.		
FRANK L. WATROUS,	- - - -	SUPERINTENDENT
Arkansas Valley Station, Rocky Ford, Colorado.		
GEORGE F. BRENINGER,	- - - -	SUPERINTENDENT
Divide Station, Table Rock, Colorado.		
EDWIN BASHOR,	- - - -	SUPERINTENDENT
San Luis Valley Station, Monte Vista, Colorado.		

* Resigned May 15, 1891.

† Resigned March 1, 1891.

‡ Resigned March 15, 1891.

§ Resigned January 1, 1891.

Resigned June 1, 1891.

Register of Students.

1890-91.

POST GRADUATES.

Duncan, Charles A., B. S. (Biology)---	Timnath,	Colo.
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SENIOR CLASS.

Calkins, John S. -----	Semper,	Colo.
Evans, Charles R.-----	Fort Collins,	"
McLain, Minnie E.-----	Timnath,	"

JUNIOR CLASS.

Beach, Charles W.-----	Julesburg,	Colo.
Beach, Frank -----	"	"
Bell, Alice-----	Fort Collins,	"
Bell, Samuel-----	" "	"
Carpenter, Don A. -----	" "	"
DeVotie, Frank D.-----	Greeley,	"
Preston, Porter J.-----	Longmont,	"
Stimson, Lewis L.-----	North Platte,	Neb.
Thompson, Frank H.-----	Castle Rock,	Colo.

SOPHOMORE CLASS.

Bloomfield, John -----	Meeker,	Colo.
Buffum, George H.-----	Fort Collins,	"
Boothroyd, Samuel-----	Arkins,	"
Garrett, Wm. B.-----	Fort Collins,	"
Gilkison, Charles J.-----	La Porte,	"
Harrington, Minnie F.-----	Fort Collins,	"
Kendall, Herbert S. -----	" "	"
Lewis, Ida M. -----	Timnath,	"

Lunn, Will B.	Fort Collins,	Colo.
Plummer, Charles S.	Fort Robinson,	Neb.
Ralph, John W.	Fort Collins,	Colo.
Robinson, Harold F.	" "	"
Southworth, Celia May	Denver,	"
Swan, Sylvia G.	Livermore,	"
Walter, Raymond	Fort Collins,	"
Wallace, John U.	La Porte,	"
Willard, Will W.	Aspen,	"
Williams, Harry F.	Greenland,	"

FRESHMAN CLASS.

Affolter, Fred.	Longmont,	Colo.
Alford, Fred.	Fort Collins,	"
Akers, Jessie M.	" "	"
Anderson, William O.	Columbus,	Neb.
Black, Herbert A.	Fort Collins,	Colo.
Blinn, Philo K.	Berthoud,	"
Bloomfield, George	Meeker,	"
Brooks, Lulu A.	Portland, Michigan	
Brown, Jesse J.	Eddyville,	Iowa
Cowen, Jacob H.	Hotchkiss,	Colo.
Dimmick, Frank M.	Fort Duchesne,	Utah
Dorsey, George W.	Chico Springs,	N. M.
Fairfield, Will H.	Berthoud,	Colo.
Garrett, George E.	Fort Collins,	"
Ish, Lizzie E.	" "	"
Lewis, Seth C.	Timnath,	"
Newton, Clifton	Denver,	"
Parlin, Edward H.	"	"
Robinson, John A.	Lindon,	"
Sargent, Rodney G.	Denver,	"
Saxton, Cora A.	Livermore,	"
Silcott, Nora	Manhattan,	"
True, Edwin S.	Longmont,	"

Voegeli, Henry	Cincinnati,	Ohio
Warren, Charles B.	Fort Collins,	Colo.
Warren, Nathan C.	" "	"
Wilson, Cora	Columbus,	Ind.
Wright, Paul M.	Fort Collins,	Colo.

PREPARATORY CLASS.

Baldwin, James A.	Beulah,	Colo.
Caulesberry, John H.	Leadville,	"
Culver, Fred.	Longmont,	"
Cushing, Eva H.	Fort Collins,	"
Davis, Joseph S.	Denver,	"
Duncan, James E.	Pittsburg,	Pa.
Duncan, John B.	Timnath,	Colo.
Edwards, Irene C.	Fort Collins,	"
Evans, Nettie R.	" "	"
Evans, Farris M.	Pueblo,	"
Forbess, George M.	Berthoud,	"
Gilkison, William F.	La Porte,	"
Green, Walter	Aspen,	"
Griffith, Ezra E.	Tucson,	Arizona
Heisey, E. Wilson	Pittsburg,	Pa.
Herrick, Selden F.	Denver,	Colo.
Henry, Guy V.	Fort Robinson,	Neb.
Hunt, Erminie	Fort Collins,	Colo.
Ingersoll, Nina M.	" "	"
Lambert, Ella S.	" "	"
Lee, Julia	" "	"
McEwen, Walter	Victoria,	B. C.
Miner, Duane F.	Fort Collins,	Colo.
Moore, Walter D.	Denver,	"
Patterson, Ida	Fort Collins,	"
Reed, Olin G.	" "	"
Reed, William G.	" "	"
Reid, Vada	Hayden,	"

Rosenow, Albert	Fort Collins,	Colo.
Roucolle, Adrienne	" "	"
Silcott, Alice E.	Manhattan,	"
Shonerd, Marshall	Parachute,	"
Stephenson, Ross C.	Fort Collins,	"
Swem, Clide M.	Denver,	"
Walker, Lee H.	Fort Collins,	"
Wallace, Edward	" "	"

SPECIAL STUDENTS.

Byington, Prof. E. L.	Fort Collins,	Colo.
Byington, Mrs. E. L.	" "	"
Calkins, Herbert V.	Longmont,	"
Denslow, Harry E.	Fort Collins,	"
Dwigans, William C.	Carbondale,	"
Forbess, Delia M.	Hygiene,	"
Park, Ambro S.	Cincinnati,	Ohio
Ramer, Nellie	Fort Collins,	Colo.
Ramey, Thomas M.	" "	"
Smith, Mamie O.	Loveland,	"
Strohl, Clara E.	Greeley,	"

RECAPITULATION.

Post Graduates	1
Seniors	3
Juniors	9
Sophomores	18
Freshmen	28
Preparatory	36
Special and Irregular	11
Total	106

Graduates.

1884.

George H. Glover, B. S., D. V. M., Farmer and Veterinary
 Surgeon..... Longmont, Colo.
 Elizabeth Lawrence, B. S., *nee* Coy, at Home..... Fort Collins, Colo.
 Leonidas Loomis, B. S., Stockman..... Green River, Wyo.

1885.

Cora B. Blinn, B. S., at Home..... Berthoud, Colo.
 Edna Hice, B. S., at Home..... Fort Collins, Colo.
 Lelia Robertson, B. S., *nee* Loomis, at Home..... Fort Collins, Colo.
 Grace Patton, B. S., Professor of English and Stenography,
 State Agricultural College..... Fort Collins, Colo.
 Robert E. Trimble, B. S., Assistant to Meteorologist, State
 Experiment Station..... Fort Collins, Colo.
 Helen Rigden, B. S., *nee* White, at Home..... Fort Collins, Colo.

1886.

Wilbert J. Sickman, B. S..... Fort Collins, Colo.

1887.

Eleanor F. Gill, B. S., at Home..... Fort Collins, Colo.
 Daisy E. Stratton, B. S., Deputy County Clerk..... Buffalo, Wyo.
 Lerah G. Stratton, B. S., Librarian, State Agricultural Col-
 lege..... Fort Collins, Colo.
 Edwin G. Nettleton, B. S., Assistant Engineer, Bear River
 Canal..... Utah

1888.

Lewis A. Coffin, B. S., Farmer..... Longmont, Colo.
 Harvey H. Griffin, B. S., Superintendent San Luis Valley
 Experiment Station..... Monte Vista, Colo.
 Josephine Lee, B. S., Teacher..... Weld County, Colo.
 Genevieve E. McLain, B. S., Student..... Paris, France

1889.

Lucy Bell, B. S., Student.....Paris, France
 Arthur L. Davis, B. S., Farmer and Horticulturist....Arvada, Colo.

1890.

Clarence V. Benson, B. S., Student, University of Michigan,
Ann Arbor, Mich.
 Velma V. Benson, B. S., Teacher.....Loveland, Colo.
 Burt C. Buffum, B. S., Professor of Botany and Horticulture,
 University of Wyoming.....Laramie, Wyo.
 Charles A. Duncan, B. S., Instructor in Irrigation, South
 Dakota Experiment Station.....Brookings, South Dakota
 Newton C. Garbutt, B. S., Clerk of County Court..Fort Collins, Colo.
 Helen E. Lunn, B. S., at Home.....Fort Collins, Colo.
 Harry R. Temple, B. S., Engineer.....Ward, Colo.
 Cora B. Thoman, B. S., at Home.....Fort Collins, Colo.
 Mary L. Weaver, B. S., Student, Ohio State University.....
Columbus, Ohio
 Total.....29

Alumni Association:

OFFICERS :

PRESIDENT,	-	-	-	-	-	GRACE PATTON
VICE-PRESIDENT,	-	-	-	-	-	WILBERT J. SICKMAN
SECRETARY,	-	-	-	-	-	GENEVIEVE E. McLAIN
TREASURER,	-	-	-	-	-	JOSEPHINE LEE

EXECUTIVE COMMITTEE:

GRACE PATTON, President.	WILBERT J. SICKMAN, Vice-President
GENEVIEVE E. McLAIN, Secretary.	
EDNA HICE.	CHARLES A. DUNCAN.

COURSE OF STUDY.

PREPARATORY YEAR.

FIRST TERM.

Arithmetic-----Sanford's Analytic
 Elocution-----Fenno
 Word Analysis-----Swinton
 Drawing-----Free Hand

Labor, two hours, farm.

SECOND TERM.

Arithmetic-----Sanford's Analytic
 English Analysis-----Reed and Kellogg
 United States History-----Johnson
 Composition-----Swinton

Labor, two hours, shop.

THIRD TERM.

Arithmetic-----Sanford's Analytic
 Physical Geography-----Houston
 English Analysis-----Reed and Kellogg
 Drawing-----Free Hand

Labor, two hours, garden.

Military drill, daily.

FRESHMAN YEAR.**FIRST TERM.**

Algebra	-----	Olney
Botany	-----	Gray
Composition and Rhetoric	-----	Kellogg
Drawing	-----	Geometric

Labor, two hours, garden.

SECOND TERM.

Algebra	-----	Olney
History and Literature	-----	Sheldon and Kellogg
Book-keeping	-----	Meservey
Agriculture	-----	Lectures

Labor, two hours, shop.

THIRD TERM.

Algebra	-----	Olney
History and Literature	-----	Sheldon and Kellogg
Botany	-----	Gray, with Coulter's Flora
Agriculture, Breeds of Stock	-----	Lectures

Labor, two hours, farm.

Military drill, daily.

SOPHOMORE YEAR.

FIRST TERM.

Geometry----- Wentworth
 Chemistry----- Norton
 History and Literature----- Sheldon and Kellogg
 Drawing-----

Labor, two hours, chemistry.

SECOND TERM.

Geometry----- Wentworth
 Chemistry----- Norton
 Physiology----- Martin
 Rhetoric----- D. J. Hill

Labor, two hours, chemistry.

THIRD TERM.

Trigonometry----- Wentworth
 Surveying-----
 Physiology----- Martin
 Chemistry----- Norton

Labor, two hours : { Chemistry, one half term.
 { Surveying, one half term.

Military drill, daily.

The Course from this point is separated into :

1. The Agricultural Course.
2. The Mechanical Course.
3. The Irrigation Engineering Course.
4. The Ladies' Course.

All leading to the degree of B. S. (Bachelor of Science).

Agricultural Course.

JUNIOR YEAR.

FIRST TERM.

Agriculture	-----	Lectures
Horticulture	-----	Lectures
Physics	-----	Deschanel
Zoology	-----	Colton's Manual
Labor, two hours :	$\left\{ \begin{array}{l} \text{Physics, two-fifths term.} \\ \text{Horticulture, two-fifths term.} \\ \text{Zoology, one-fifth term.} \end{array} \right.$	

SECOND TERM.

Agricultural Chemistry	-----	Storer
Geology	-----	LeConte
Physics	-----	Deschanel
Analytic Geometry	-----	Olney
Labor, two hours :	$\left\{ \begin{array}{l} \text{Physics, two-fifths term.} \\ \text{Chemistry, three-fifths term.} \end{array} \right.$	

THIRD TERM.

Agricultural Chemistry	-----	Storer
Geology	-----	LeConte
Physics	-----	Deschanel
Entomology	-----	Packard
Labor, two hours :	$\left\{ \begin{array}{l} \text{Physics, two-fifths term.} \\ \text{Chemistry, two-fifths term.} \\ \text{Entomology, one-fifth term.} \end{array} \right.$	

SENIOR YEAR.

FIRST TERM.

Agriculture (Soils, Irrigation, Feeding)-----	Lectures
Landscape Gardening, one-half term }-----	Lectures
Meteorology, one-half term }	
Astronomy-----	Young
Psychology-----	D. J. Hill
Labor, two hours, farm.	

SECOND TERM.

Agriculture (Drainage, Cereals, Cross-Fertilization)	Lectures
Horticulture-----	Lectures
Logic-----	Gregory
Physiological Botany-----	Strassburger
Labor, two hours, garden.	

THIRD TERM.

Agriculture (Stock Breeding)-----	Lectures
Irrigation Hydraulics-----	Lectures
Political Economy-----	Mill
Thesis Work-----	
Labor, two hours, { Farm, two-fifths term.	
{ Garden, three-fifths term.	
Military drill, daily, throughout the course.	

SENIOR YEAR.

FIRST TERM.

The Steam Engine	-----	Lectures
Differential Calculus	-----	Taylor
Astronomy	-----	Young
Psychology	-----	D. J. Hill
Labor, two hours, Mechanics.		

SECOND TERM.

Transmission of Power	-----	Lectures
Integral Calculus	-----	Taylor
Logic	-----	Gregory
Thesis Work	-----	
Labor, two hours, Mechanics.		

THIRD TERM.

Study of Special Machines	-----	Lectures
Special Chemistry	-----	Lectures
Political Economy	-----	Mill
Thesis Work	-----	
Labor, two hours, Mechanics.		

Military drill, daily, throughout the course.

Irrigation Engineering Course.

JUNIOR YEAR.

FIRST TERM.

Hydraulics	-----	Lectures
Higher Algebra	-----	Olney
Physics	-----	Deschanel
Zoology	-----	Colton's Manual
Labor, two hours,	{	Physics, two-fifths term.
	{	Field Work, Irrigation, two-fifths term.
	{	Zoology, one-fifth term.

SECOND TERM.

Drawing	-----	
Analytic Geometry	-----	Olney
Physics	-----	Deschanel
Geology	-----	LeConte
Labor, two hours,	{	Physics, two-fifths term.
	{	Geology, three-fifths term.

THIRD TERM.

Irrigation Engineering	-----	Lectures
Descriptive Geometry	-----	
Physics	-----	Deschanel
Geology	-----	LeConte
Labor, two hours,	{	Physics, two-fifths term.
	{	Field Engineering, three-fifths term.

SENIOR YEAR.

FIRST TERM.

Hydraulics, Canals and Canal Work	Lectures
Horticulture	Lectures
Differential Calculus	Taylor
Astronomy	Young
Labor, two hours, field work in Engineering.	

SECOND TERM.

Drawing	
Strength of Materials	Lectures
Integral Calculus	Taylor
Logic	Gregory
Labor, two hours, Mechanics.	

THIRD TERM.

Hydraulics	Lectures
Special Chemistry	Lectures
Political Economy	Mill
Thesis Work	
Labor, two hours, field work in Irrigation.	
Military drill, daily, throughout the course.	

Ladies' Course.

JUNIOR.

FIRST TERM.

Drawing -----
 German -----
 Physics ----- Deschanel
 Zoology ----- Colton's Manual
 Laboratory work in Physics and Zoology.

SECOND TERM.

Stenography and Type-writing -----
 German -----
 Physics ----- Deschanel
 Geology ----- LeConte
 Laboratory work in Physics and Geology.

THIRD TERM.

Drawing -----
 German -----
 Physics ----- Deschanel
 Geology ----- LeConte
 Laboratory work in Physics.

SENIOR YEAR.

FIRST TERM.

German	-----	Schiller
Landscape Gardening, one-half term,	} -----	Lectures
Meteorology, one-half term,		
Astronomy	-----	Young
Psychology	-----	D. J. Hil

SECOND TERM.

German	-----	Schiller
Drawing	-----	
Horticulture	-----	Lectures
Logic	-----	Gregory

THIRD TERM.

Scientific German	-----	
Drawing	-----	
Political Economy	-----	Mill
Thesis Work	-----	

RECITATION SCHEME—FALL TERM.

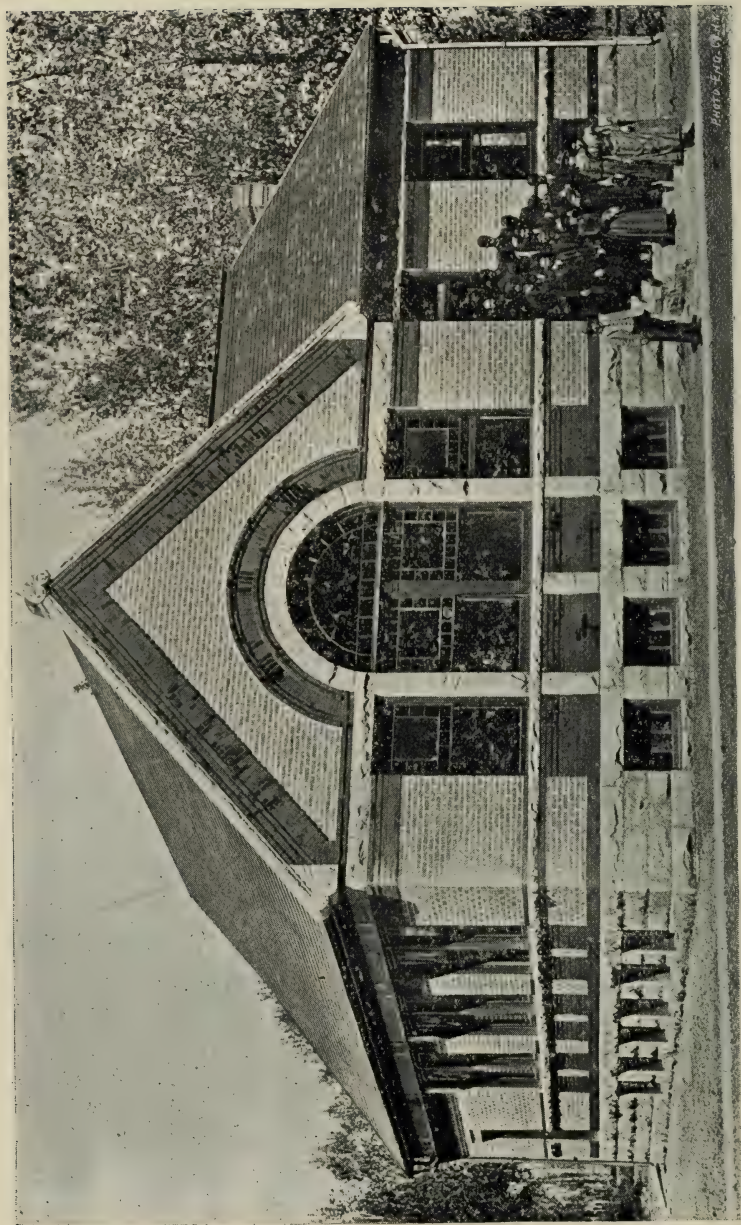
TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
8 a. m.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.
8:10 a. m.	Arithmetic.	Rhetoric.	Drawing.	Physics.	Meteorology. Landscape Gardening. Differential Calculus.
9 a. m.	Free Hand Drawing.	Algebra.	History and Literature.	Hydraulics. Horticulture. Drawing.	Psychology. Horticulture.
9:50 a. m.	Elocution.	Botany.	Geometry.	Zoology.	German. Hydraulics, Canals, etc. The Steam Engine. Agriculture.
10:40 a. m.	Word Analysis.	Drawing.	Chemistry.	German. Higher Algebra. Agriculture.	Astronomy.
11:30 a. m. to 12:15 p. m.	Military Drill.	Free Hand Drawing. Military Drill.	Free Hand Drawing. Military Drill.	Free Hand Drawing. Military Drill.	Free Hand Drawing. Military Drill.
Labor, 1:30 p. m. to 3:30 p. m.	Farm, 5.	Garden, 5.	Chemistry, 5.	Mechanics, 2. Physics, 2. Zoology, 1. Field Work, 2.	Mechanics, 5. Engineering, 5. Farm, 5.

RECITATION SCHEME—WINTER TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
8 a. m.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.
8:10 a. m.	Arithmetic.	Book-keeping.	Physiology.	Physics.	Integral Calculus, German. Agriculture.
9 a. m.	English Analysis.	History and Literature.	Geometry.	Geology.	Horticulture. Transmission of Power. Strength of Materials.
9:50 a. m.	U. S. History.	Algebra.	Rhetoric.	Agricultural Chemistry. Drawing. Stenography and Typewriting.	Physiological Botany.
10:40 a. m.	Composition.	Agriculture.	Chemistry.	Analytic Geometry. German.	Logic. Thesis Work. Drawing.
11:30 a. m. to 12:15 p. m.	Military Drill.	Military Drill.	Military Drill.	Military Drill.	Free Hand Drawing. Military Drill.
Labor, 1:30 p. m. to 5:30 p. m.	Mechanics, 5. Two Divisions.	Mechanics, 5. Two Divisions.	Chemistry, 4. Physiology, 1.	Physics, 2. Chemistry, 3. Geology, 3. Mechanics, 3.	Mechanics, 5. Horticulture, 5.

RECITATION SCHEME-SPRING TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
8 a. m.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.	General Assembly of Students.
8:10 a. m.	Arithmetic.	History and Literature.	Physiology.	Physics.	Political Economy.
9 a. m.	Free Hand Drawing.	Algebra.	Chemistry.	Agricultural Chemistry. Drawing. Irrigation Engineering. German.	Thesis Work.
9:50 a. m.	Physical Geography.	Botany.	Trigonometry.	Geology.	Irrigation Engineering. Special Machines. Agriculture. German.
10:40 a. m.	English Analysis.	Agriculture.	Surveying.	Descriptive Geometry. Entomology.	Irrigation Hydraulics. Special Chemistry. Elective Work.
11:30 a. m. to 12:15 p. m.	Military Drill.	Free Hand Drawing. Military Drill.	Military Drill.	Free Hand Drawing. Military Drill.	Free Hand Drawing. Military Drill.
Labor, 1:30 p. m. to 3:30 p. m.	Garden, 5.	Farm, 5.	Chemistry, 4 ; 6 weeks. Surveying, 5 ; 7 weeks. Physiology, 1 ; 6 weeks.	Physics, 2. Chemistry, 2. Geology, 3. Mechanics, 3. Field Engineering, 3. Entomology, 1.	Mechanics, 5. Farm, 3. Horticulture, 2. Hydraulics, 5.



BOTANICAL AND HORTICULTURAL LABORATORY.

Photo E. J. 10. 11

DEPARTMENTS OF INSTRUCTION AND LABOR.

AGRICULTURE.

A greater effort than ever before is being made by the authorities to give special attention to the course of instruction in the School of Agriculture, designing especially to prepare students for agricultural pursuits. To this end, a brief but thoroughly practical

WINTER COURSE

of lectures will be instituted the coming year. The lectures will continue four weeks, and in addition to those on Agriculture, will also include a lecture daily on Agricultural Chemistry, Botany, Horticulture and Entomology. Special lectures will also be solicited from experts in certain lines. To those desiring more knowledge in Agriculture and kindred subjects than is offered in the Winter lectures, a

SHORT COURSE IN AGRICULTURE

of two years is provided, with practical and instructive farm and garden labor, two hours daily, or laboratory or experimental work and military drill during the entire course. The instruction will consist of lectures, principally on the elements, history, origin and development of, and the general principles underlying Agriculture; breeds of live

stock, their adaptation to this country and modifications produced by climate, food and treatment; the dairy in its many forms, together with the breeds for dairy purposes. Soils, seeding, harvesting, marketing, etc., with which, those who will most likely desire this course, are more or less well acquainted practically, will be considered but briefly.

THE REGULAR AGRICULTURAL COURSE.

The four years course will begin with the College year and in the Freshman Class. Agriculture will be taught, beginning with the Winter term and continuing through the year. The instruction will consist of the lectures of the Short Course above, the students of the two classes coming together to receive them. This plan will be followed through the Sophomore year, the regular students completing the Short Course with those taking the special course.

In the Junior year, Fall term, the instruction in Agriculture, after a short recapitulation on soils, their preparation, seeding, etc., which was given in the Spring term of the Sophomore year, will begin with lectures on harvesting, storing and marketing. Fertilizing and farm buildings will receive attention much of the year.

In the Senior year, first term, there is further instruction in regard to soils, irrigation and special instruction in the principles of stock feeding. In the second term, the subjects of drainage, cereals and cross-fertilization are treated.

In the third term, the subject of improved stock breeding and dairying, with practical work, is very thoroughly treated in a course of lectures.

The whole course will be supplemented by the labor on the farm, laboratory and experimental work, at the times noted in the schedule of exercises.

SHORT COURSE IN AGRICULTURE.

FIRST YEAR.

First term :

1. Agriculture.
2. Botany.
3. Zoology.
4. Composition and Rhetoric.
Labor, garden.

Second term :

1. Agriculture.
2. Book-keeping.
3. Physics (elementary).
4. Drawing.
Labor, shop.

Third term :

1. Agriculture.
2. Botany.
3. Drawing.
4. Entomology.
Labor, farm.

SECOND YEAR.

First term :

1. Agriculture.
2. Horticulture.
3. Chemistry.
4. Drawing.
Labor, chemical laboratory

Second term :

1. Agriculture.
2. Horticulture.
3. Agricultural Chemistry.
4. Physiology.
Labor, chemical laboratory.

Third term :

1. Agriculture.
 2. Agricultural Chemistry.
 3. Physiology.
 4. Irrigation Hydraulics.
- Labor, chemical laboratory.

Military drill throughout the course.

PHYSIOLOGY

is taken during the second and third terms of the Sophomore year, Martin's Human Body being used as a text book. Aside from the daily recitations, students spend two hours, one day in the week, in the laboratory, to study human and comparative osteology and to dissect anesthetized animals, for the purpose of examining the tissues and organs *in situ*.

The laboratory is especially well equipped, possessing, among other things, a fine series of mounted skeletons, an expensive manikin (a life-sized model of the human body so dissected as to show nearly every tissue and organ that can be seen in an actual dissection), enlarged papier mache' models of the eye, ear, brain, and other important parts, compound and dissecting microscopes, microtomes and dissecting instruments.

ZOOLOGY

is taken the first term of the Junior year. This branch of natural science is taught largely from actual demonstrations in the laboratory, Colton's Practical Zoology being used as a guide. Each student is furnished with typical forms of the different branches of the animal kingdom, which he studies carefully, making drawings and taking notes. In this manner, the student acquires a practical knowledge of the structure and classification of animals, that he cannot obtain by a mere study of books.

Microscopes, dissecting tools and all necessary equipment for laboratory work are furnished free, each student being required to care for his own instruments.

ENTOMOLOGY

is taken in the third term of the Junior year in the Agricultural Course, and is taught by lectures and laboratory work. Each student gets together and classifies a collection of insects representing all of the orders, and traces at least one species through all its transformations, taking notes and making drawings and descriptions.

Especial attention is given to the economic features of this study. Those insects known to be particularly injurious to Colorado are given special attention, and the students are made familiar with their habits and natural history. Students also prepare the principal insecticide substances and apply them for the destruction of insects.

In connection with this department is a good apiary and honey house, thoroughly equipped with the most modern appliances, and students so desiring are taught and allowed to put into practice all the manipulations of the apiary.

Students taking this study are required to purchase Packard's Entomology for Beginners.

BOTANY.

The study of Botany begins with the Freshman year. The Fall term is devoted mainly to Structural Botany. The plant as an individual is studied as to its parts, or organs—the relation each part bears to the whole—the variations in the parts, and the uses they serve. Roots, branches, buds, leaves, flowers and fruits are placed in the students' hands, and the technical descriptive terms are learned by applying them directly to the plants.

Gray's Lessons is used as text to supplement the instruction from the plants themselves. A few lectures on classification and the relations of plants to each other are given toward the close of this term.

The Spring term of the same year is devoted to Systematic Botany. Dissecting microscopes and necessary tools are furnished and plants are each day supplied for analysis. Students are taught the application of the principles learned during the first term, so that they may understand the methods of determining the names of plants. The great variety of plants at hand enables the student to become familiar with all the leading natural orders. Written descriptions of the plants analyzed are required. Coulter's Manual of Rocky Mountain Botany is the text book used.

PHYSIOLOGICAL BOTANY.

In the Winter term of the Senior year, the Agricultural students study vegetable physiology and the minute structure of plants, using as a text book Strasburger's Practical Botany.

Compound microscopes are supplied, and the Botanical laboratory is open to members of the class two hours each afternoon.

An herbarium of native and foreign plants and the greenhouse furnish material for study.

A portion of this term is devoted to Cryptogamic Botany, special attention being given to rusts, smuts and mildews, injurious to plants.

The laboratory is well equipped with books of reference and with all necessary apparatus and re-agents.

HORTICULTURE.

Instruction in the several branches of Horticulture is given by lectures, as follows :

In the Fall term of the Junior year, vegetable cult-

ure, including kitchen and market gardening, seed growing and seed saving. The principal topics considered are, the best situation for, and laying out of the garden, irrigation of garden crops, rotation of crops, general methods of planting and management, composts and commercial fertilizers, care of tools, construction, management and uses of hot-beds and cold frames, harvesting, marketing and storing vegetables.

POMOLOGY.

The division of Pomology which relates to small fruit culture is discussed in detail during this term. The history of the species, the best varieties, methods of culture, harvesting and marketing, and the diseases affecting small-fruit gardens. A portion of this term is devoted to Forestry. Lectures are given on the gathering and preservation of forest-tree seed, the planting of seed and the care of seedlings, on the value of trees for timber and ornament, for hedges, screens and shelter belts for this State. Floriculture is also treated on such topics as the construction, heating and management of greenhouses; the propagation, cultivation and management of greenhouse plants for commercial or private purposes; insects and diseases of plants under glass, with remedies. In the Winter term of the Senior year, lectures are given upon the history of cultivated plants, variation of plants under cultivation, as influenced by climate, latitude, altitude and general surroundings. Cross-fertilization and Hybridization are discussed in detail. Pomology is again taken up and the theory and practice of orchard management is considered in detail. Methods of propagation, including a thorough discussion of budding and grafting, planting, pruning, diseases, gathering and marketing.

LANDSCAPE GARDENING.

One-half of the Fall term of the Senior year is allotted for this study. The general principles of the art are

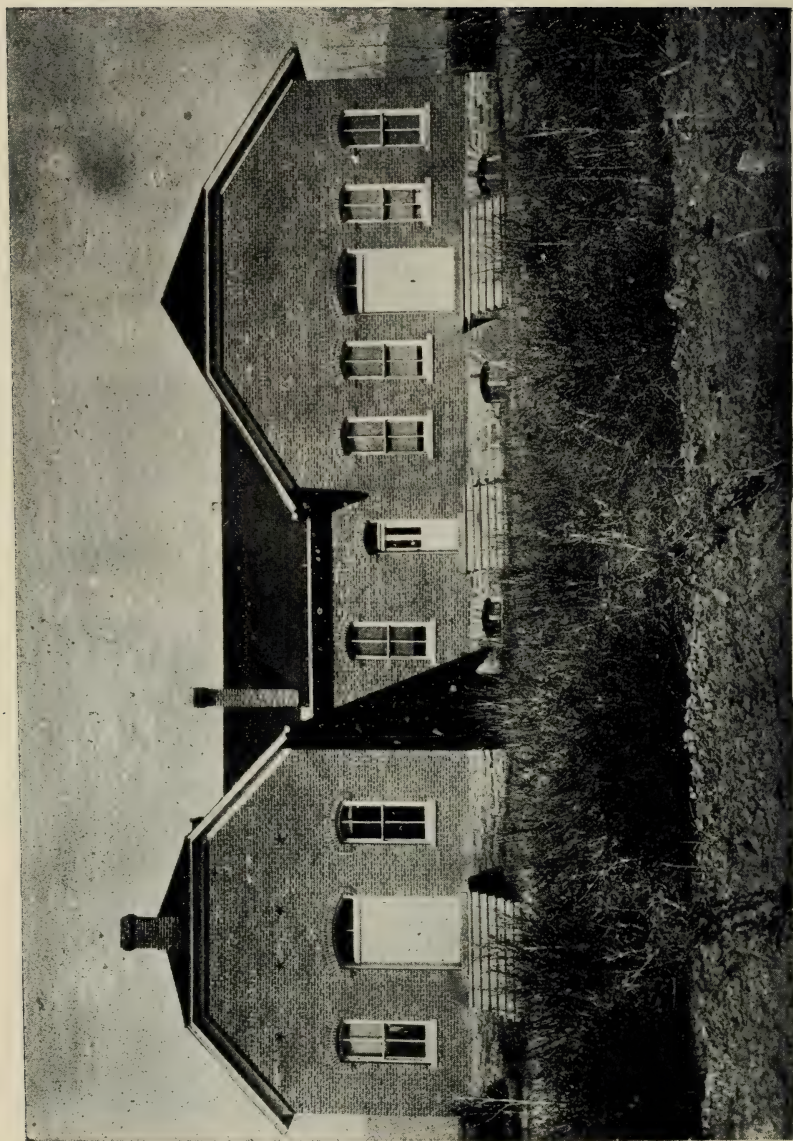
discussed by lectures and practical instruction given in the selection and laying out of city and country places. The principal topics are, the selection of a place, the location of buildings, drives and walks, what to plant and how to plant. The works of Downing and Kemp are used as books of reference.

CHEMISTRY.

It is the object of this department to give the student an opportunity to acquire a thorough mastery of the elementary principles of chemical science. To attain this object, theory and practice are made to go hand in hand. In the first term of the Sophomore year, the class listens to a series of lectures, accompanied with text book work, upon the general theory of the science, its history and development. In this course of lectures are discussed the subjects of acids, bases and salts, and the principles of chemical philosophy. The natural history, chemical and physical properties of each of the elements are discussed in detail, the whole being illustrated by experiments. While taking this course, the student spends two hours each day in the chemical laboratory, repeating the experiments shown in the class room, and making others which may be suggested, thus serving to familiarize him with the various forms of compounds, the marked distinctions between the different classes of salts, the use of chemical nomenclature and the manipulation of apparatus. Practice in the use of the blow pipe accompanies this work, and an insight into determinative mineralogy is thus acquired. The use and application of the spectroscope is also taught. The students in the laboratory, at the end of the first term, are examined in the text book (O'Brine's Laboratory Guide) and by analysis of *unknown bodies* in the dry way.

In the second term of the Sophomore year, the Inorganic Chemistry is finished and Organic Chemistry is





CHEMICAL LABORATORY.

taken up. The laboratory work continues during the term, and the student takes up the tests for the bases and their separation; also, the tests for the acids and their separation. The students are examined at the close of the second term by unknown bodies, composed of mixtures of the several groups of bases and acids.

In the third term of the Sophomore year the class completes Organic Chemistry, with some practice in Chemical Physics and Stoichiometry. In the laboratory, the separation of the bases and acids is reviewed, tests for the poisons and their separation from organic mixtures, organic compounds are made and volumetric analysis completed.

In the Agricultural course, in the second and third terms of the Junior year, the students listen to a course of lectures upon Agricultural Chemistry, in which are discussed such subjects as the following: Relation of Chemistry to Agriculture, the literature of Agricultural Chemistry, elements of plant growth, their relative abundance and importance, the atmosphere, the soil, fertilizers, etc. Storer's Agriculture, Johnson's "How Crops Grow" and "How Crops Feed" are used as reference books. Laboratory work accompanies the lectures and text books. The study of quantitative analysis begins in the gravimetric way, and, after some little practice, students will be directed in any line of special work they may desire.

In the third term of the Senior year of the Mechanical course, the students study the chemistry of alloys, iron, steel and fuel, and in the laboratory they are taught the analysis of these bodies, including furnace gases.

In the third term of the Senior year of the Irrigation course, the students study the chemistry of building materials, using Wagner's Chemical Technology as a guide. In the laboratory they have the analysis of soils and water. Students who desire it, will have an

opportunity to see, in the Station laboratory, the analysis of food, blood, poisons, urine, water, coal, minerals, soils, assaying and gas analysis. Keeping in mind the object for which our college is founded, we have so planned our Chemical course as to prepare the student for the general application of Chemistry in relation to the industrial arts, while seeking to thoroughly ground him in the application of the science to agriculture. A new chemical laboratory, fitted up with modern appliances and desks for thirty-six students, is ready for the classes.

Students have access to the following current chemical literature: *Chemical News*, *Analyst*, *Journal of the Chemical Society*, *Journal für Landwirthschaft*, *Journal of Analytic Chemistry*, and a complete set of "Fresenius Zeitschrift für Analyt. Chemie."; also the following works of reference: Watt's Dictionary of Chemistry, the works of Roscoe, Schorelmmmer, Bloxam, Tidy, Miller, Stricker, Pinney, Fowne, Wagner; in analysis, the works of Fresenius, Wills, Classen, Prescott, Thorpe, Wohler, Crooke's Select Methods, Allen's Organic Analysis, Hart, Sutton, Blythe, etc.

GEOLOGY.

Recognizing the fact that Chemistry and Geology are the foundations of agricultural science, the subject of Geology receives corresponding attention. The second term of the Junior year, LeConte's Elements of Geology is taken up and continued during the year. The students work two hours, three days per week, in the laboratory. Lectures on economic Geology are also given, using William's Manual as a guide. Frequent visits to the mountains and quarries illustrate the practical application of dip, strike, fault, formations, stratifications and elevations by barometer, thermometer and level, whenever field work is practicable. At the end of the third term, the students

are required to identify and describe twenty-five rocks or mineral specimens.

The following works of reference are accessible to the students: Croll, Bischof, Lyell, Dana, Nicholson, Geikie, Van Cotta, Platner, Brush, Elderhorst and the geological reports of other States. Contributions to this department will be thankfully received and credit given.

HISTORY, LITERATURE AND LANGUAGE.

HISTORY AND LITERATURE.

During the last two terms of the Freshman year and the first term of the Sophomore year, Sheldon's History and Kellogg's Literature are studied together, so that each historic period and the authors connected with it may be taken at the same time. The work is supplemented by lectures.

The study of English Literature includes critical readings of selected authors, and special attention to the writings of the five great English poets and to the works of some great author, for special reading during each term. A careful oversight of all outside reading is attempted and every effort is made to promote a taste for good literature.

GERMAN.

German is studied during the Junior and Senior years. The great increase of the German population in America during the last thirty years has made a practical knowledge of the German language a business commodity as well as an elegant accomplishment. A course of two years in German is not sufficient to give a mastery of the language, but the limited time of study is occupied in giving, as far as possible, power to converse in every-day life. The recitations are conducted in the language studied, and much stress is placed on the ability to con-

verse, as the most certain way to read and use German effectively. It is thought that the study of some language besides our own is of great assistance to the pupil as a means of mental growth. During the Junior year, Worman's First and Second German books are used, and Andersen's Selected Fairy Tales is used as a basis for conversation. During the last year, the time is equally divided between technical and literary German. A play from Schiller and a selection from Faust are read, with practice in reading at sight, and the study of some German scientific work is pursued.

The German periodical, *Die Gartenlaube*, is placed in the library for the benefit of those students who are studying German.

ENGLISH AND STENOGRAPHY.

ENGLISH.

The study of Word Analysis is begun and a review of English Analysis continued through the Preparatory year. In the Winter term, Preparatory year, the class studies Swinton's Composition, devoting special attention to punctuation, capitalization, the arrangement and structure of sentences and the fundamental principles of style.

During the second term, Freshman year, the subject of English Composition is continued, with Kellogg's Rhetoric for a text book. The student gives attention to the subject of style and is made familiar with good English. It is the object of this work to give the student ability to write a clear, neatly-arranged letter, properly spelled, punctuated and composed, and to give him some skill in the logical arrangement of his written thoughts.

During this course in English, the student writes a composition each week, or more often, as required.

During the Spring term of the Sophomore year, the study of the English language is continued by the study of D. J. Hill's Rhetoric.

STENOGRAPHY.

The work in Stenography and type-writing is taken up in the Junior year.

The object of this course is to impress upon the student the importance of a knowledge of the English language and a correct use of the same in business life, as well as to enable him to become an efficient stenographer and type-writer.

MATHEMATICS.

The instruction offered by this department is designed to conform to the general aim and purpose of the institution; accordingly only those branches of pure mathematics are taught which bear directly upon the curriculum and which are a necessity in the every-day life and business of the well-rounded business man.

Withal, the course as pursued is very nearly equal, by subjects, to that pursued in the ordinary classical course of Eastern colleges, but is less in detail, while the attention given to the applied mathematics, including surveying and irrigation canal engineering, is much greater.

ARITHMETIC.

Students pursue during the Preparatory year the subject of Arithmetic, the first and second terms being devoted exclusively to decimal notation and analysis, the third term to the shorter practical methods of commercial operations.

ALGEBRA.

The study of Algebra is begun in the first term of the Freshman year and runs through that year. The first term is devoted mainly to the fundamental principles and operations governing the literal notation and factoring, the endeavor being to so thoroughly ground the student that the succeeding operations may be more of an unfolding process than a task.

The second and third terms' work is devoted to the study of Algebra proper, the Quadratic Equations, and so much more as the ability of the average class will allow.

GEOMETRY.

Geometry is placed in the first and second terms, Sophomore. Problems in Mensuration and original exercises will be added to the routine text-book work, giving the student frequent practice in the application of principles already acquired and fixing firmly the knowledge gained.

TRIGONOMETRY

occupies the third term, Sophomore. Plane Trigonometry, occupying a more practical place in the general run of business, is the only part taught.

Higher Algebra is taken up by the Juniors of the Mechanical and Irrigation Engineering courses, in their first term. Reviewing Quadratics and the Calculus of Radicals, the term's work will cover the theory of Equations, the theory and use of Logarithms, etc., as complete a purely Algebraic course as will fit the student for the intelligent study and use of Algebraic forms and terms in his subsequent work.

Following Algebra, in the second term, Junior, so much of Analytic Geometry as is necessary in Physics, Astronomy and Hydraulic Formulæ, will be given in a daily recitation.

Descriptive Geometry, Orthographic Projection, Linear Perspective, Shades and Shadows, etc., will occupy the third term.

Astronomy occupies the first term, Senior. Owing to the want of astronomical instruments, Descriptive Astronomy alone is taught.

The Calculus—Differential and Integral—will take the first and second terms respectively of the Senior year.

The subject will be taught by the infinitesimal method, rather than by the theory of limits, which is more adapted for the scholar than for the college student, and will be sufficiently full to enable him to solve, discuss and use the Calculus of any ordinary work on strains used in the average technical course.

PRACTICAL MECHANICS.

The old system of apprenticeship is rapidly becoming a thing of the past, and it is now almost impossible for a boy to learn a trade in any modern shop or factory. This is owing largely to the introduction of special machinery necessitating special workmen to manage it. The workman who has learned to run a machine of this kind is kept at that work, as being most profitable to his employer. His practical knowledge of other methods and machines is, therefore, confined to narrow limits, and should a vacancy occur in a superior position, he is not fitted for the place, because he is unacquainted with other practical parts connected with his trade, and he has had no opportunity to learn the manipulations and principles which are involved in them.

This department has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as shall be deemed necessary to explain the principles involved. It does not teach special trades, nor manufacture salable articles; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any one complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of *how* a tool or machine should be used.

and the *manner of laying out work* for the same is thoroughly taught.

Should the circumstances be such that the student enter manufacturing, his ideas have been broadened by this training and he will the more readily grasp anything new that may come up in his business, or, if he takes up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

The shop instruction will be divided into courses as follows, and in each course will be given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc. :

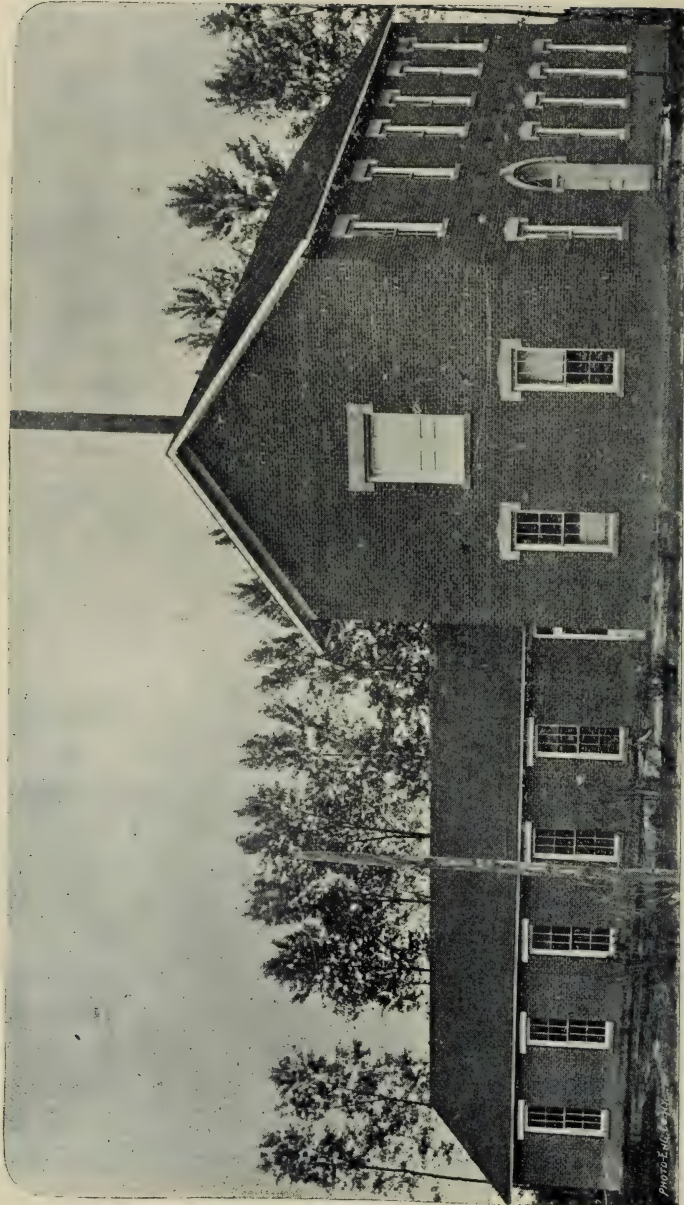
COURSE OF LABOR.

Bench work in wood	13 weeks
Wood turning	12 "
Pattern making	12 "
Molding and casting	12 "
Iron and steel forging	13 "
Machine work in metals	12 "
Vise work in metals	12 "

This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First—The use of planes in joining, smoothing and getting the piece out of wind, lining off and the use of saws in cutting across and with the grain and keeping to line.





MECHANIC SHOP.

Photo E. M. C. 1895

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle.

MACHINE WORK IN WOOD.

In connection with this course, with the use of tools, will be given the most rapid and economical method of selecting and preparing the wood for the machine. There will be given examples of:

First—Straight turning.

Second—Cutting in and squaring off.

Third—Concave, convex and compound curves.

Fourth—Handles for chisels and other tools.

Fifth—Examples in chuck work in separate and combined pieces.

Sixth—How to turn a ball.

PATTERN MAKING AND FOUNDRY WORK.

After becoming familiar with bench and machine work in wood, an application of both is made, by constructing patterns with due regard to shrinkage, draft and the best method of constructing the pattern, so that it causes the least amount of trouble in the foundry. There will be given examples of:

Plain work.

Core work.

Pulley work.

Pipe work.

Gear work.

Core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry room by the students, where molds and cores are made, and castings are made in iron or brass.

In the foundry the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

MACHINE WORK IN METAL.

The care and management of the tools, their construction, etc.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals.

Centering and straightening work.

Straight turning and squaring.

Boring.

Making and fitting joints.

Chuck work.

Screw cutting, inside and outside.

Drilling, tapping and reaming.

Boring with boring bar and use of center rest.

Polishing and finishing.

Hand tool work.

DRAWING.

Free-hand copy and dictation.

Free-hand model and object drawing.

Light and shade.

Geometric problems.

Orthographic and isometric projections and projection of shadows.

Development and intersection of surfaces.

Wood carving, diaper, incised and relief.

Persons having parts of machines, patterns, small models or working drawings, may, if they choose, donate the same to the department, and thereby confer a great favor upon the College, and especially upon the department.

MILITARY SCIENCE.

For instruction in Military Tactics, the students are formed into companies. The system of instruction being that in use in the United States Army, is calculated to form the habit of prompt obedience, foster the natural martial instinct and prepare the students, should necessity arise, to organize a company or battalion of our National militia.

The drill includes the school of the soldier, company and battalion, in infantry tactics, supplemented by lectures on the art and science of war.

Instruction in Artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill, etc. For use in drill, the department has two three-inch rifled field pieces, from the Rock Island Arsenal, and seventy cadet rifles with accoutrements.

Military drill is required of each male student, unless excused for physical disability or by special vote of the Faculty for good and satisfactory reasons. Each cadet is required to purchase a copy of the standard United States Infantry Tactics, for study and reference. He is also to provide himself with a uniform, modeled somewhat after the uniform of the regular army. It is neat and durable, consists of blouse, pantaloons, cap and gloves, and costs about twenty dollars.

In the Fall and Spring terms, a period of forty-five minutes daily is devoted to outdoor maneuvers. During the Winter, the new armory is used, and a portion of the time is devoted to recitations in Tactics and lectures. When possible, an encampment will be held at the close of the Spring term for practical instruction in guard and field duty.

PHYSICS.

The study of Physics continues through the three terms of the Junior year, with afternoon laboratory practice two days weekly. The sciences of Mechanics, Heat, Light, Sound and Electricity are studied, and illustrated as far as possible by apparatus and experiment. In the afternoon, many of the experiments are performed by the students and some original investigations carried out.

METEOROLOGY.

Meteorology is studied for six weeks of the Autumn term of the Senior year in the Agricultural and Ladies' Courses. It includes a discussion of practical Meteorology, including the instruments used, the elements of the laws of storms, the characteristics of climate and the elements of Agricultural Meteorology.

SURVEYING.

Surveying, in the last term of the Sophomore year, will include the theory, use and adjustment of instruments used in Surveying, the history and practice of United States Surveys, the location of lost corners, field work and mapping. Also such elementary knowledge of the measurement and laws of water as pertain to the surveyor's duties in this country.

IRRIGATION ENGINEERING.

Throughout this Western country there seems no better opportunity for a large class of young men, or one in which they can be of greater service to agriculture, than in preparing themselves to undertake the solution of the questions relating to irrigation. It is the object of this course to give its students a thorough groundwork in the theoretical and practical knowledge of hydraulics and Irrigation Engineering, to render them competent to act

as water commissioners or superintendents, canal superintendents and to give them the foundation for a successful irrigation engineer.

The course is the first one which has been introduced into American colleges.

It includes the theoretical and practical study of hydraulics, Irrigation Engineering as practiced by our best engineers, reservoirs and reservoir construction, irrigation management in this and other countries. The whole course is accompanied by field work, which is intended to give a thorough training in the handling and use of instruments, in the gauging of streams and canals, in the design of structures, etc.

A large collection of photographs and plans of irrigation structures aid very materially in the study of present practice. There is available one of the largest collections of publications on irrigation in the United States, covering American, French, Italian, Egyptian, Indian and Australian practice.

The department invites donations or exchanges of plans, photographs and information of irrigation structures and of irrigation practice and methods.

The study of hydraulics is aided by an experimental apparatus, supplied with water from an irrigating canal, which enable experiments to be made on orifices of various sizes.

STRENGTH OF MATERIALS.

This course, given in the Winter term of the Senior year, will include the theoretical and experimental investigation of the strength of the materials used in engineering. The study is aided by the testing machine recently purchased, which will serve for tests within the limit of twenty-five tons.

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ELOCUTION AND ORATORY

is required in the Preparatory, Freshman, Sophomore, Junior and Senior years. The work is devoted to voice production, articulation and pronunciation, analytic and expressive reading, gesture, debates, platform criticisms and oratorical drill.

As a matter of health, the study of elocution is invaluable, as it teaches, through voice production, the proper use of the organs for breathing. It will make one a better business man, it will fit one better in every way for the different walks of life, it teaches him to study his fellow men, and it leads him to find the best of himself and impress it upon them.

The study of Elocution and Oratory is, through the aid of the world's greatest minds, continued long after the student has said farewell to his Alma Mater—it is health giving and refining.

PHYSICAL CULTURE

is not required, but all should avail themselves of the instruction offered in the gymnasium, if possible. The young men will be instructed by the Professor of Military Tactics, while the young women will be under the care of the special instructor of elocution.

The Armory has been fitted up for the present with such useful apparatus as oval chest expander, pulleys, stretchers, clubs, dumb bells, wands, pummeling bag, boxing gloves, foils, traveling rings, trapeze, rowing machine, stationary and teeter ladders, etc., with the promise of becoming more complete in time.

The course of Physical Culture for the young women will consist of the best of the Sargent School, Swedish Movement and Delsarte System, from light to more heavy work upon the apparatus, all taught from physiological laws; stooping shoulders are made straight, narrow chests made

broad, the weak made strong, the strong made agile and graceful.

MENTAL SCIENCE.

This study is pursued during one term in the Senior year, in such a manner as to give a good outline, which the student is expected to fill in largely by supplementary reading. Porter's "Elements of Intellectual Science" is used as a text book and guide.

LOGIC.

The study of this branch is considered of prime importance, as in the presentation of the inductive we find the method pursued for the advancement of science and the means of elimination of error from experiment. The term's work is equally divided between the inductive and deductive methods.

POLITICAL ECONOMY.

Lectures and discussions are used. The short term only gives sufficient time to arouse an interest in the divisions of the subject and its leading principles; the student is induced to read, to weigh carefully, and thus to act intelligently on the questions which interest us as a nation in our growth and increase of wealth.

CIVIL GOVERNMENT.

The study of the Constitution of the United States and of the State of Colorado both conjoin to broaden the mind of the student and the better fit him to take his place among the citizens of this or other States. These, with other subjects relating to civics, will be given by a series of exercises in the Senior year.

PUBLIC RHETORICALS.

Each student enrolled shall render at least one public rhetorical exercise each College term, unless excused.

by Faculty vote. These exercises shall consist of declamations and recitations for the younger classes, and original exercises for the advanced students. The importance of these exercises to the student can scarcely be estimated, as every one should have a training which will enable him to present his views upon any question in public in an intelligent and pleasing manner.

DEGREES.

Upon those who complete the work of any one of the four courses in a satisfactory manner, the State Board of Agriculture, upon recommendation of the Faculty of Instruction, confer the degree of B. S. (Bachelor of Science).

The degree of M. S. (Master of Science) will be conferred upon all graduates of the College in good standing, who have pursued thoroughly some line of work after graduation, and who submit an acceptable thesis on the same.

The State Experiment Station.

This includes the Central Station at the College and sub-stations located at Monte Vista, Rio Grande County ; Rocky Ford, Otero County ; Table Rock, El Paso, County, and Delta, Delta County. The latter has not yet been put in operation.

This department was created in acceptance of the conditions of the Hatch Act, and the work has been arranged in conformity with its provisions.

Bulletins are issued quarterly and reports annually, which are distributed to those who request them, as long as the editions last. Address the Director, Fort Collins.

In connection with this work, the Secretary of the State Board of Agriculture annually distributes to applicants seeds of such varieties as he may obtain from the Experiment Station or elsewhere. All cannot be supplied, but such seeds as we have will be sent, where, in our judgment, they will do the most good.

EXPENSES.

The expense of a student attending the State Agricultural College is slight, as any student who can pay his traveling expenses and board, and, in addition, can buy his clothes and books, can attend. All fees were abolished by the Board of Agriculture, January 1, 1891.

Rooms for young men may be had in the Dormitory in the order of application. The Dormitory building is heated by steam and lighted by electric lights. Each room contains a bedstead; all other furniture must be supplied by the students. In order that good care shall be exercised over the property, each student is required to make a deposit of \$2.50 with the Secretary. At the end of the term, if no damage be done other than ordinary wear, the sum is returned to the depositor.

YEARLY EXPENSES.

Board (September 2 to June 9), 40 weeks.....	\$120.00
Heat, light and room rent.....	14.00
Laundry expense (approximately).....	20.00
Books (approximately)	16.00
Total	\$170.00

In this estimate, clothing and traveling expenses are not included. The wages of students, at 10 cents per hour, may be used to lessen the expenses, so that \$150.00, in addition to clothing and traveling expenses, will take one through the College year.

ADVANCE PAYMENTS.

Board must be paid to the Steward monthly in advance. Other expenses and the deposit must be paid to the Secretary at his office. No reduction is made unless for absence of a full week at one time. In such a case, a reduction of 50 per cent. is allowed. An enforced absence of two consecutive weeks entitles the absentee to full reduction of time. A student leaving at any time has any excess or balance to his credit refunded to him, on settlement.

Conditions of Admission.

The College admits students of both sexes. Candidates for admission must be fifteen years of age, and unless personally known, must give good references. They must also pass an examination in the common branches, viz.: Reading, Writing, Spelling, Grammar, Arithmetic and Geography. The work of the Preparatory year is, in part, a thorough review of Grammar and Arithmetic, with the additional subjects of United States History, Physical Geography, Elocution, Composition, Word Analysis and Drawing.

EXAMINATIONS FOR ENTRANCE.

Examinations for admission to the Freshman class will be as follows:

In *Reading*, candidates must be able to read understandingly, and with proper accent and emphasis.

In *Writing* and *Orthography*, they must be able to write from dictation, sentences from standard pieces of English literature, both prose and poetry, sufficient in number to test their qualifications in Penmanship and Orthography.

Candidates will also be required to pass examinations in *Arithmetic*, *Grammar* and *Descriptive Geography*.

Candidates for advanced classes or work must be examined on all previous work, or bring certificates of standing from schools having an equivalent grade of work.

Those desiring to enter the Preparatory class must show some knowledge of Grammar, and be examined in Arithmetic as far as interest, and in Descriptive Geography. They must show a general knowledge sufficient to enable them to take up the work.

Specimen questions follow, so that candidates may gain an idea as to what will be required upon presenting themselves for entrance to the Freshman class.

Similarly thorough examinations will be made for admission to higher classes in all subjects completed by them :

ARITHMETIC.

1. Explain clearly and accurately the objects of Arithmetic and the methods of writing and reading numbers—entire, fractional, compound or denominate.

2. Explain the operation of division of whole numbers—abstract and compound or denominate, giving rule with its reasons.

3. Explain nature of prime numbers and factors of a number, of a common divisor, greatest common divisor, and give rule, with its reasons, for obtaining it.

4. Explain nature of decimal fractions and give rule, with its reasons, for multiplication of.

5. Define terms, ratio and proportion. Give properties of the latter and the rule, with its reasons, for the statement and solution of questions in simple proportion or single rule of three.

6. Find value of $5\frac{3}{4} - 4\ 1-7 -|- 5-28 -:- 1\frac{1}{2} \times 2\frac{1}{3}$.

7. Divide 7.58405 by 11.7. Express dividend, divisor and quotient in words.

8. Find number of bushels in a bin 10 ft. x 12 ft. x 5 ft. Number of gallons in a cubical cistern whose edge is 6 ft.

9. At what per cent. above cost must a man mark a book that he may take off 10 per cent. of marked price and still have 10 per cent. profit?

10. Find principal that will amount to \$1,111.11, in eleven years at 11 per cent.

GRAMMAR.

1. What is English Grammar?
2. What are the parts of speech, and why so called?
3. What is the office and use of each in the various positions they occupy in a sentence?
4. Define the different parts of a sentence, viz., principal parts, modifiers, phrases and clauses.
5. Define the modifications of a noun, viz., person, number, gender and case.
6. Define voice, mode and six tenses of the verb.
7. Name and define the pronouns, viz., personal, relative, interrogative and demonstrative.
8. What is comparison of adjectives and adverbs?
9. Define simple, compound and complex sentences.
10. Define a declarative, an interrogative, an imperative, an exclamatory sentence.

DESCRIPTIVE GEOGRAPHY.

(Questions will be asked upon the following topics :

General.

1. Definitions of the divisions of the earth's surface, land and water, zones, latitude and longitude.
2. Location of large bodies of water.
3. Points with reference to important mountain chains.
4. Ditto in regard to islands.
5. Ditto in regard to rivers.
6. Ditto in regard to lakes.

Specific and Local—United States.

7. The location and termini of important lines of communication by rail and water.

8. Boundary and location of selected States and groups of States.

9. Prominent geographical features of the United States, as rivers, mountains, lakes and the like.

REGULAR AND SPECIAL COURSES.

Unless there seem to be strong and excellent reasons for it, students will not be allowed to take a special course of study, and in case it is allowed, the student must show that he is well qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, nor will he be allowed to drop a study, unless by permission of the Faculty.

LEAVING COLLEGE.

A student will not be allowed to leave College in term time without leave of absence granted by the President or Faculty, otherwise the student will be liable to *suspension* or *expulsion*. Temporary leave of absence can be granted by the President, or the officer in charge during his absence. Final separation from College must be acted upon by the Faculty.

LABOR.

Labor, two hours each school day, is required of all students not excused for physical disability. This labor (see Course of Study) is performed on farm and garden, in shop and laboratories, in field work, in irrigation, and surveying and engineering.

DISCIPLINE.

The discipline of the College is administered by the Faculty according to a system of demerits.

Misconduct in or out of classes, unexcused absences from any required College exercises, meddling with College property, etc., receive one or more demerits, as the

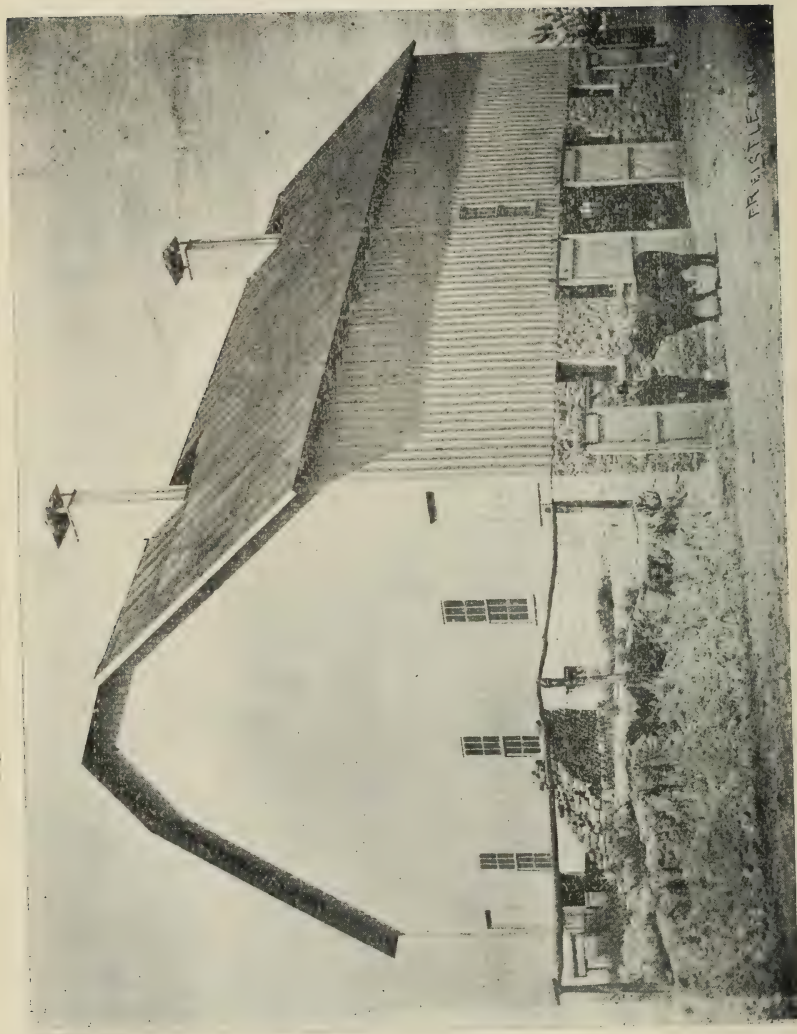
case may seem to require. Ten demerits given, causes the President to write the parents; twelve demerits suspend, while fifteen expel the student from the College.

Study hours begin at 7 P. M. and continue until 10 P. M.; 10:15 P. M. lights are out.

GRADES IN WORK AND STUDY.

Each student is expected to maintain a grade of 65, on a scale with 100 as perfect. A student is graded as passed in any study or branch of manual practice when the average of his daily progress and his term examination equals 65, on a scale of 100 as perfect.

Failure may be made up, and tested by special examination, or the study must be again taken with a subsequent class.



COLLEGE BARN.

MEANS FOR

Instruction and Illustration.

The College hall, with the new addition just completed, containing large recitation rooms for the following departments: Mathematics, Mechanics and Drawing, Agriculture, English and Stenography, Physics and Irrigation Engineering, and History, Literature and Language; also, commodious Library and Reading rooms, Museum, Zoological Laboratory and recitation room, with work room; also, offices for officers of the College, rooms for Board of Agriculture, Faculty, etc. Finally, there is a large and well-arranged Assembly room, with opera chairs for seating 300 persons, stage, retiring rooms, cloak rooms, etc., attached, for the convenience and comfort of the school and the public. The whole is heated by steam and admirably lighted by electric lights from the works of the Fort Collins Electric Light Company. The basement is heated and lighted, and contains an Armory, 40x72 feet, for purposes of drill and gymnasium, the heating plant, bath rooms, rooms for janitor, storage, etc.

The Chemical Laboratory, with lecture room for forty students; work or analytic room, with desks for twenty-four students, each desk being supplied with water and gas for the use of each student, and convenient hoods for ventilation; also, Station Laboratory, with balance room, distillation room, etc.

The Botanical and Horticultural Laboratory, completed in May, 1890, with fine rooms for instruction and laboratory work, office, tool room, seed room, grafting room, and ample basement room for storage. The Conservatory attached, 20x50 feet, containing about 200 species, or 1,000 plants, representing many interesting and rare botanical families; heated by improved hot water apparatus.

The orchards and grounds carefully laid out and planted to ornamental shrubs and trees, the plantation of forest trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot beds and cold frames.

The farm of 240 acres, with a large part under cultivation, including the experimental ground of about fourteen acres, containing two plats, A and B, the former consisting of fifty smaller plats, the latter of thirty-three, ranging in size from 1-40 to 1-5 of an acre. All are permanently laid with drives and walks, and with iron stakes designating the corners. These permanent corner stakes are four feet long, of which three and one-half feet are driven in the earth. In addition, there are ten plats of one acre each, for larger experiments.

The live stock consists of Short-horn Durham cattle, Shropshire Down sheep and grade draft horses. It is expected that a selection of registered hogs will be added in a short time; also representatives of other breeds of live stock.

The Mechanic Shop, consisting of main building, 25x56 feet, two stories in height, with a rear portion, 20x60 feet, of one story. The upper floor of the main building is fitted with benches for sixteen students in wood work, desks and tools for ten students in wood carving, four wood lathes, two scroll saws, one band saw,

one double circular-saw bench, one wood-planing machine, one foot mortising machine, one grindstone, and a supply of clamps and other appliances.

The lower floor contains an iron working room, with twelve benches for work in filing, scraping, etc., a speed lathe, two engine lathes with attachments, a Universal milling machine, a shaper, a planer, an emery grinder, two drilling machines and a grindstone. In addition, this room is supplied with a good assortment of gauges, reamers, taps, dies, and other small tools. Here is also placed a machine for testing the strength of materials. This machine has a capacity of 50,000 pounds. There is also on this floor an office and wash room, besides a wide hall containing the twelve-horse power engine, and from which rise the stairs to the floor above.

The rear portion contains boiler and coal room, and forge room with six forges, furnished with blast from a rotary blower. The gases are carried away from these forges by means of a large steel exhaust fan.

The foundry is situated at the rear of the forge room, is fitted with benches and tools for bench molding, and is also supplied with tools and material for floor work.

There is an excellent eighteen-inch cupola for melting iron, a good brass furnace, core ovens, flasks, etc. All the appliances for the room, including the cupola, were made by the students.

The machinery and appliances in the shop are first-class in every respect.

The department of Irrigation Engineering possesses current meters of various patterns (one electrical registering), a Darcy-Pitot tube, ten nilometers of various patterns, an apparatus for experiments on the flow of water through orifices and over weirs, pressure gauges and other means

for instruction in hydraulic engineering, including a large collection of photographs and plans of irrigation works in Colorado and other States and countries.

It also has five transits, two with solar attachments; hand, dumpy and wye levels; compasses, plane table, and rods, chains and tapes of various patterns; odometer, planimeter, photographic apparatus, etc.

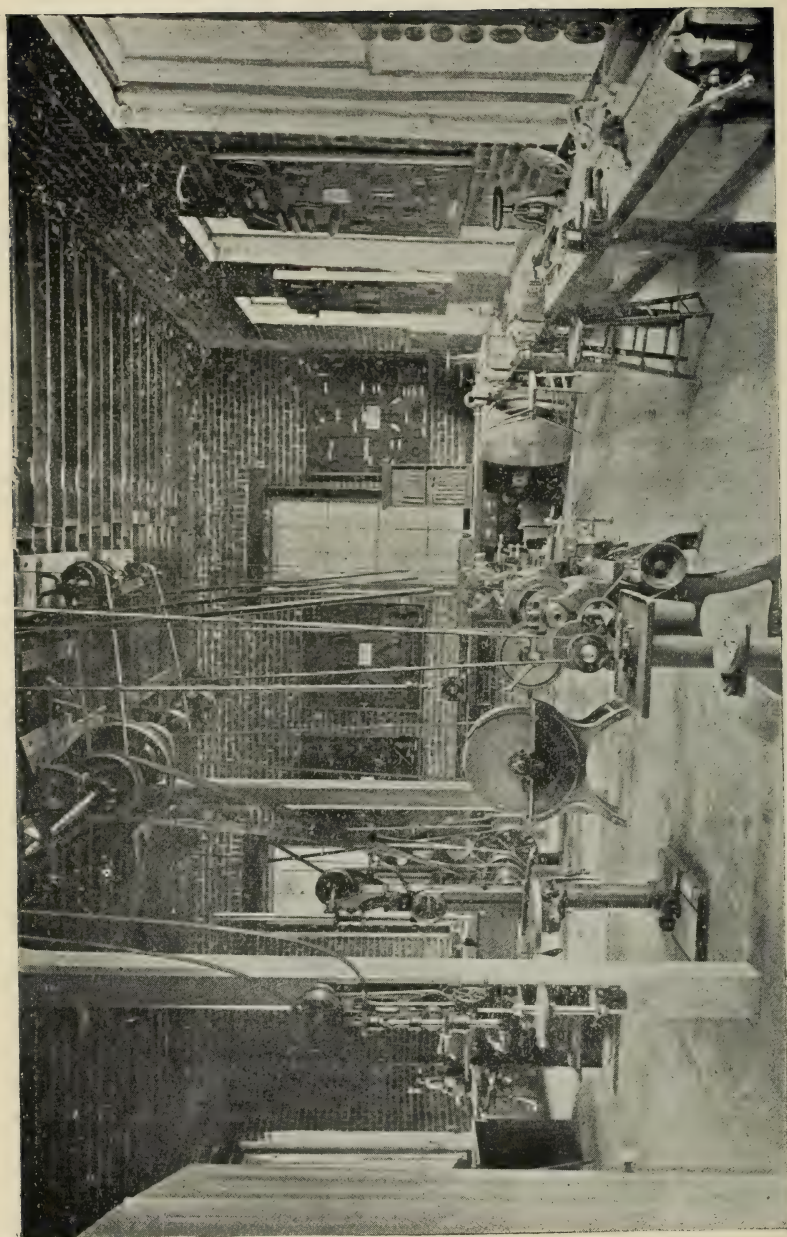
It also has, in connection with the Department of Mechanics, a 50,000-pound testing machine for testing the strength of materials.

For illustration in Physics, there is a large collection of apparatus, including means for accurate measures in mechanics, light, heat, electricity; micrometers, balances, a set of U. S. standard weights and measures; air pump and accessories; stereopticon; large induction coil, standard ohm, galvanometers, voltmeters, ammeters, dynamo, etc., with work rooms, dark room, and rooms for laboratory practice.

Also, a complete set of meteorological instruments and apparatus, many self-registering, and including a standard thermometer, which has been tested by the best standards and observers of this country.

The Military department has seventy cadet rifles and two 3-inch rifled field pieces from the War Department, and each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice, and artillery firing.

The Scientific department is supplied with a fine cabinet of specimens, illustrating Botany, Entomology, Geology and Mineralogy, Zoology and Comparative Anatomy.



MECHANIC SHOP—MACHINE ROOM.

LOCATION.

The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural sections of the State. The town contains 2,500 inhabitants, and stands in a beautiful situation about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. It draws water for use from the melting snows of the mountains; its streets and buildings are finely lighted by an excellent electric light service, and its sidewalks are exclusively made of excellent flagstone, which is found in large quarries, almost at its doors.

The College is at the south side of town; on either side of the Colorado Central Railroad are its buildings and the farm. Visitors are always welcomed, and they find the town accessible by six trains, which arrive and depart daily for Denver and other points. With pure water, a healthful location, electric lights and steam heat, our students should be content and the parents satisfied.

HISTORY.

The State Agricultural College of Colorado, in common with those of other States, had its origin in an act of Congress, passed July 2, 1862, which granted 90,000 acres of land as an endowment fund for a College, "where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the *liberal* and *practical* education of the industrial classes in the *several pursuits* and *professions* of life."

No benefit was received from this grant until an act of Congress, passed April 24, 1884, confirmed it to the State. The land is now located, a part is sold, and the proceeds will form a perpetual endowment fund.

The State has supported the College by the passage of an act (1883), levying a tax of one-fifth of a mill annually on each dollar of valuation. In 1891 this tax was changed to one-sixth of a mill.

The College was incorporated by the act of 1870, and the act was amended in 1872, and again in 1874, but no steps were taken toward the erection of a College by the Board in charge. In 1877, by death of the President of the Board and removal of other members from the State,

an emergency was declared to exist and a new law was passed, which was given immediate effect. To the State Board of Agriculture, as thus reorganized, was entrusted the work of building a College.

The town of Fort Collins was selected as its site, and at a meeting held February 27, 1878, it was determined to erect a building suited to College purposes. The corner stone was laid July 29, 1878, and in the same year the first building was completed. The College was not opened for the reception of students until September 1, 1879. The Dormitory was erected in 1881, and the Chemical Laboratory in 1882, but it was not thoroughly fitted for work until May, 1883. It was enlarged for Station work in 1888.

A small propagating house was built in 1882, for the purpose of aiding Horticulture. The present Greenhouse, with all modern appliances, was completed September 1, 1883. On the same day the Mechanic Shop was completed, its machinery in order and ready to run.

On June 1, 1890, was completed the large addition to the main building, and also the new Botanical and Horticultural Laboratory, thus giving largely increased facilities for work.

The College now comprises the following distinct departments: Agriculture; Botany and Horticulture; Chemistry and Zoology; History, Literature and Modern Language; Mathematics; Mechanics and Drawing; Military Science; Physics and Engineering; English and Stenography, and the Experiment Station.

CALENDAR.

1891-92.

SEPTEMBER.

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DECEMBER.

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JUNE.

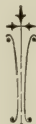
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JULY.

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AUGUST.

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Calendar of Exercises.

1891-92.

Examinations for Entrance, Tuesday, September 1, 1891
 Fall Term begins ----- Wednesday, September 2, 1891
 Fall Term closes ----- Tuesday, December 15, 1891
 Winter Term begins ----- Wednesday, December 30, 1891
 Winter Term closes ----- Tuesday, March 22, 1892
 Spring Term begins ----- Wednesday, March 30, 1892
 Baccalaureate Address ----- Sunday, June 5, 1892
 Board of Agriculture meets --- Wednesday, June 8, 1892
 Commencement ----- Thursday, June 9, 1892.

TABLE OF CONTENTS.

	PAGE
State Board of Agriculture.....	4
Officers and Committees.....	5
Faculty of Instruction.....	6
Officers of the Experiment Station.....	7
Register of Students.....	8
Recapitulation.....	11
Graduates.....	12
Alumni Association.....	14
Course of Study and Labor.....	15
Departments of Instruction and Labor.....	31
Agriculture.....	31
Physiology.....	34
Zoology.....	34
Entomology.....	35
Botany and Horticulture.....	35
Chemistry and Geology.....	38
History, Literature and Language.....	43
English and Stenography.....	44
Mathematics.....	45
Mechanics and Drawing.....	47
Military Science.....	53
Physics and Irrigation Engineering.....	54
Miscellaneous.....	56
The Experiment Station.....	59
Expenses.....	60
Conditions of Admission.....	62
Examinations for Entrance.....	62
Leaving College.....	65
Courses, Regular and Special.....	65
Discipline and Regulations.....	65
Means of Illustration.....	69
Location.....	75
History.....	76
Calendar.....	78
Calendar of Exercises.....	79
Table of Contents.....	80

REGISTER

OF THE

OFFICERS AND STUDENTS

OF

THE STATE AGRICULTURAL COLLEGE

FORT COLLINS, COLORADO.

COURSES OF STUDY.



1891-1892.

FORT COLLINS, COLORADO.
THE EXPRESS PUBLISHING COMPANY.
1892.

THE STATE BOARD OF AGRICULTURE.

				TERM EXPIRES
HON. B. S. LAGRANGE,	-	-	Greeley,	- - 1899
HON. JAMES E. DuBOIS,	-	-	Fort Collins,	- - 1899
HON. A. L. EMIGH,	-	-	Fort Collins,	- - 1897
HON. JOHN J. RYAN,	-	-	Loveland,	- - 1897
HON. FRANK J. ANNIS,	-	-	Fort Collins,	- - 1895
HON. CHARLES H. SMALL,	-	-	Pueblo,	- - 1895
HON. R. A. SOUTHWORTH,	-	-	Denver,	- - 1893
HON. GEORGE WYMAN	-	-	Longmont,	- - 1893
HIS EXCELLENCY GOV. JOHN L. ROUTT,				} <i>ex-officio.</i>
PRESIDENT ALSTON ELLIS,				

OFFICERS OF THE BOARD.

HON. GEORGE WYMAN,	-	-	-	-	-	-	-	President
HON. FRANK J. ANNIS.	-	-	-	-	-	-	-	Secretary
HON. FRANKLIN C. AVERY.	-	-	-	-	-	-	-	Treasurer

COMMITTEES.

EXECUTIVE.

J. J. Ryan,	B. S. LaGrange,	George Wyman
The President of the College,		
The Secretary of the Board and Faculty, } <i>ex-officio</i> .		

FINANCE.

J. J. Ryan,	C. H. Small,	J. E. DuBois
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FARM AND STOCK.

B. S. LaGrange.	A. L. Emigh.	J. J. Ryan
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FACULTY, LIBRARY, AND COURSES OF STUDY.

Alston Ellis.	F. J. Annis.	R. A. Southworth
---------------	--------------	------------------

BOTANY, HORTICULTURE, AND ENTOMOLOGY.

A. L. Emigh.	F. J. Annis.	J. E. Dubois
--------------	--------------	--------------

MATHEMATICS, ENGINEERING, AND MILITARY SCIENCE.

R. A. Southworth.	B. S. LaGrange.	A. L. Emigh
-------------------	-----------------	-------------

MECHANICS AND CHEMISTRY.

J. E. DuBois.	C. H. Small.	R. A. Southworth
---------------	--------------	------------------

COLLEGE BUILDINGS AND PERMANENT IMPROVEMENTS.

C. H. Small.	B. S. LaGrange.	F. J. Annis
--------------	-----------------	-------------

FACULTY.

ALSTON ELLIS, A. M., PH. D., LL. D.,

President and Professor of Political Economy and Logic.

JAMES W. LAWRENCE, B. S.,

Professor of Mechanics and Drawing.

MAUD BELL,

Professor of History, Literature, and Languages.

DAVID O'BRINE, E. M., D. Sc., M. D.,

Professor of Chemistry and Geology.

LOUIS G. CARPENTER, M. S.,

Professor of Physics and Irrigation Engineering.

CHARLES S. CRANDALL, M. S.,

Professor of Botany and Horticulture.

JOHN C. DENT, CAPT., 20TH INFANTRY, U. S. ARMY,

Professor of Military Science and Tactics.

CLARENCE P. GILLETTE, M. S.,

Professor of Zoology and Entomology.

WALTER J. QUICK, B. S.,

Professor of Agriculture.

GRACE ESPY PATTON, B. S.,

Professor of English and Stenography.

WILLIAM J. MEYERS, B. S.,

Professor of Mathematics.

FRANK J. ANNIS, M. S.,

Secretary of Faculty.

LIBRARIAN,

CELIA MAY SOUTHWORTH.

ASSISTANTS,

F. A. HUNTLEY, B. S. A., *Agriculture.*

C. R. RICHARDS, M. E., *Mechanics and Drawing.*

J. D. STANNARD, B. S., *Physics and Engineering.*

CHARLES F. BAKER, B. S., *Zoology and Entomology.*

THE STATE EXPERIMENT STATION.

BOARD OF CONTROL: THE STATE BOARD OF AGRICULTURE.

EXECUTIVE COMMITTEE IN CHARGE:
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HON. GEORGE WYMAN.
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L. G. CARPENTER, M. S., METEOROLOGIST AND IRRIGATION ENG.
C. P. GILLETTE, M. S., ENTOMOLOGIST

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CHARLES M. BROSE, HORTICULTURE
R. E. TRIMBLE, B. S., METEOROLOGY
CHARLES F. BAKER, B. S., ENTOMOLOGY

SUB-STATIONS:
FRANK L. WATROUS, SUPERINTENDENT
Arkansas Valley Station, Rocky Ford, Colorado.
GEORGE F. BRENINGER, SUPERINTENDENT
Divide Station, Table Rock, Colorado.
EDWIN M. BASHOR, SUPERINTENDENT
San Luis Valley Station, Monte Vista, Colorado.

REGISTER OF STUDENTS.

1891-1892.

POST GRADUATES.

Bell, Lucy, B. S.....	Fort Collins,	Colo.
Duncan, Charles A., B. S.....	Timnath,	"
McLain, Genevieve, B. S.....	Denver,	"
McLain, Minnie E., B. S.....	Fort Collins,	"
Thoman, Cora B., B. S.....	" "	"

SENIOR CLASS.

Beach, Charles W.....	Fort Collins,	Colo.
Beach, Frank	" "	"
Bell, Alice	" "	"
Bell, Samuel.....	" "	"
Carpenter, Don A.....	" "	"
DeVotie, Frank D.....	Greeley,	"
Preston, Porter J.....	Longmont,	"
Sedgwick, Albert J.....	South Bend, Indiana.	
Stimson, Lewis L.....	North Platte,	Neb.
Thompson, Frank H.....	Castle Rock,	Colo.

JUNIOR CLASS.

Bloomfield, John	Meeker,	Colo.
Boothroyd, Samuel L.....	Arkins,	"
Gilkison, Charles J.....	La Porte,	"
Harrington, Minnie F.....	Fort Collins,	"
Lewis, Ida M.....	Timnath,	"
Ralph, William J.....	Fort Collins,	"
Walter, Raymond.....	" "	"
Willard, William W.....	Aspen,	"
Williams, Harry F.....	Greenland,	"

SOPHOMORE CLASS.

Black, Herbert A.....	Fort Collins,	"
Blinn, Philo K.....	Berthoud,	"
Brooks, Lulu A.....	Portland, Michigan.	
Cowen, Jacob H.....	Hotchkiss,	"
Dimmick, Frank M.....	Denver,	Colo.
Fairfield, William H.....	Berthoud,	"
Garrett, William B.....	Fort Collins,	"
Garrett, George E.....	" "	"
Kendall, Herbert S.....	" "	"
Mead, Edgar A.....	Greeley,	"
Plummer, Charles S.....	Fort Robinson, Neb.	
Prendergast, Stephen.....	Fort Collins,	Colo.
Strohl, Clara E.....	Greeley,	"
Walsh, John P.....	Delta,	Colo.
Wright, Paul M.....	Fort Collins,	"

FRESHMAN CLASS.

Alford, Fred.....	Fort Collins,	Colo.
Beckley, James E.....	Telluride,	"
Boothroyd, Florence J.....	Arkins,	"
Boothroyd, Edith G.....	"	"
Brandis, Kate L.....	Fort Collins,	"
Brandis, Walter M.....	" "	"
Calkins, Henry A.....	Harris,	"
Carsrud, Nicol	Fort Collins,	"
Culver, Fred.....	Longmont,	"
Cushing, Eva H.....	Fort Collins,	"
Davis, Joseph S.....	Denver,	"
Edwards, Irene C.....	Fort Collins,	"
Garrett, Milton.....	" "	"
Giddings, Mabel.....	" "	"
Gilkison, William F.....	La Porte,	"
Goldsborough, Ella.....	Fort Collins,	"
Herrick, Selden F.....	Denver,	"

Ingersoll, Nina M.....	Lincoln,	Neb.
Ish, Lizzie E.....	Fort Collins,	Colo.
Lambert, Ella.....	" "	"
Laverty, Clarence P.....	" "	"
Lewis, Seth C.....	Timnath,	"
Maxfield, Richard A.....	Parachute,	"
McAnelly, Emmett.....	Fort Collins,	"
Metcalf, Ralph E.....	" "	"
Miller, Guy.....	Longmont,	"
Moore, Carrie L.....	Fort Collins,	"
Nelson, George W.....	Denver,	"
Newton, Clifton.....	"	"
Norman, Grafton S.....	Hamilton,	Ohio.
Patterson, Ida O.....	Fort Collins,	Colo.
Reed, Olin G.....	" "	"
Schelt, Fannie C.....	" "	"
Shoner, Marshall.....	Parachute,	"
Silcott, Nora.....	Manhattan,	"
Silcott, Alice E.....	"	"
Taylor, Everett W.....	Winona,	"
Walker, Lee H.....	Fort Collins,	"
Walter, Edith.....	" "	"
Warren, Nathan C.....	" "	"
Watson, Ray C.....	Greeley,	"
Whipple, Hoyt D.....	Berthoud,	"
Wilson, Cora.....	Columbus,	Indiana.

PREPARATORY CLASS.

Ames, Mabel.....	Fort Collins,	Colo.
Bates, Grace A.....	" "	"
Bruhn, Herman.....	Santa Fe,	N. M.
Culver, Albert.....	Longmont,	Colo.
Denslow, Albert C.....	Fort Collins,	"
Ferguson, Arthur S.....	Denver,	"
Ficht, Ralph O.....	"	"

Fullerton, Alex. W.....	Fort Collins,	"
Fullerton, Harry B.....	" "	"
Gage, Bertram A.....	" "	"
Hottel, Charles M.....	" "	"
Hoover, Leslie F.....	Denver,	"
Marsh, Charles W.....	Greeley,	"
McCain, Ray.....	Fort Collins,	"
McGinley, Homer F.....	Timnath,	"
Moore, Walter D.....	Denver,	"
Moore, Jessie.....	Fort Collins,	"
Patton, Webb A.....	" "	"
Piatt, Frank	" "	"
Prendergast, Mary.....	" "	"
Stewart, Sprague.....	" "	"
Sutherland, Elmer A.....	Boulder,	"
Tannar, Hiram H.....	Raymer,	"
Wilcox, Frank M.....	Lyons,	"
Zoll, Malcolm	Manhattan,	"

SPECIAL STUDENTS.

Aldrich, Milly O.....	Fort Collins,	Colo
Barnes, William.....	" "	"
Clemens, William	" "	"
Cornell, Myrtle.....	" "	"
DuBois, Mrs. James E.....	" "	"
Dwigans, William C.....	" "	"
Jones, Fred L.....	" "	"
Livingston, Howard J.....	" "	"
McCabe, H. B.....	" "	"
McHugh, P. J., M. D.....	" "	"
Morger, James C.....	" "	"
Parker, Prof. Charles V.....	" "	"
Petersen, Peter.....	Denver,	"
Reed, William G.....	Fort Collins,	"
Roucolle, Adrienne J.....	" "	"

Ryan, Charles J.....	Loveland	"
Saxton, Cora A.....	Livermore,	"
Shafer, Etta M.....	Sardinia,	Indiana.
Snow, Elsie.....	Fort Collins,	Colo.
Southworth, Celia May.....	Denver,	"
Varney, Prof. Edgar D.....	Fort Collins,	"
Watrous, Margaret.....	Milwaukee,	Wis.
Wills, Lena.....	Fort Collins,	Colo.
Wills, Anna.....	" "	"

IRREGULAR.

Canfield, Carl B.....	Florence,	Colo.
Carlisle, Mollie.....	Fayetteville,	Ark.
Clough, Charles E.....	Fort Laramie,	Wyo.
Evans, Nettie.....	Fort Collins,	Colo.
Lansing, Jno. B.....	Pueblo,	"
McClung, Henry F.....	Fayette,	Missouri.
McEwen, Walter M.....	Victoria,	B. C.
Miner, Duane F.....	Fort Collins,	Colo.
Rosenow, Albert J.....	" "	"
Sadler, Carrie E.....	Beebe,	Ark.
Scribner, Gertrude.....	Fort Collins,	Colo.
Stephenson, Ross C.....	" "	"
Voegeli, Henry E.....	Cincinnati,	Ohio.
Warren, Charles B.....	Fort Collins,	Colo.
Weldon, Robert S.....	Arkins,	"

SUMMARY.

Post Graduates.....	5
Seniors.....	10
Juniors.....	9
Sophomores.....	15
Freshmen.....	43
Preparatory Students.....	25
Special Students.....	24
Irregular Students.....	15
Total.....	146

GRADUATES.

1884.

George H. Glover, B. S., D. V. M., Veterinary Surgeon. Denver, Colo.
Elizabeth Lawrence, B. S., *nee* Coy, at Home. Fort Collins, Colo.
Leonidas Loomis, B. S., Stockman. Green River, Wyoming

1885.

Cora B. Blinn, B. S., at Home. Berthoud, Colo.
Edna Hice, B. S., at Home. Fort Collins, Colo.
Lelia Robertson, B. S., *nee* Loomis, at Home. Fort Collins Colo.
Grace Espy Patton, B. S., Professor of English and Stenog-
raphy, State Agricultural College. Fort Collins, Colo.
Robert E. Trimble, B. S., Assistant to Meteorologist, State
Experiment Station. Fort Collins, Colo.
Helen Rigden, B. S., *nee* White, at Home. Fort Collins, Colo.

1886.

Wilbert J. Sickman, B. S., ... Fort Collins, Colo.

1887.

Eleanor F. Gill, B. S. at Home. Fort Collins, Colo.
Daisy E. Stratton, B. S., Stenographer. Tallapoosa, Georgia.
Lerah McHugh, B. S., *nee* Stratton, at Home. Fort Collins, Colo.
Edwin G. Nettleton, B. S., Assistant Engineer, Bear River
Canal. Utah.

1888.

Lewis A. Coffin, B. S., Farmer. Boise City, Idaho.
Harvey H. Griffin, B. S., Assistant Agriculturist, Agricultural
College. Las Cruces, New Mexico.

Josephine Lee, B. S., Teacher, City Schools.....Fort Collins, Colo.
 Genevieve E. McLain, B. S., Teacher of German, City Schools,
Denver, Colo.

1889.

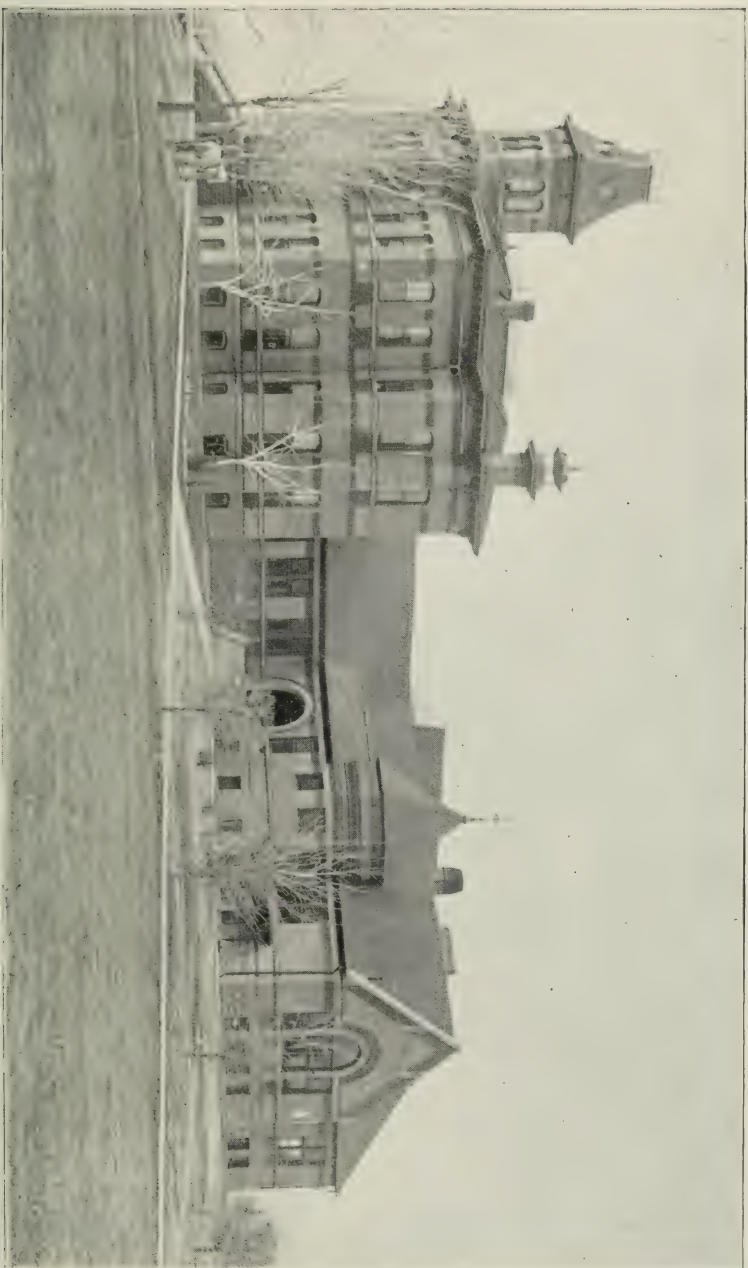
Lucy Bell, B. S., at Home.....Fort Collins, Colo.
 Arthur L. Davis, B. S., Medical Student.....Denver, Colo.

1890.

Clarence V. Benson, B. S., Student, State University.....
Ann Arbor, Mich.
 Velma V. Beebe, B. S., *nee* Benson, at Home.....Loveland, Colo.
 Burt C. Buffum, B. S., Professor of Botany and Horticulture
 State University.....Laramie, Wyo.
 Charles A. Duncan, Post Graduate Work, State Agricultural
 College.....Fort Collins, Colo.
 Newton C. Garbutt, B. S., Clerk of County Court..Fort Collins, Colo.
 Helen E. Lunn, B. S., at Home.....Fort Collins, Colo.
 Harry R. Temple, B. S., Stenographer.....Fort Collins, Colo.
 Cora B. Thoman, B. S., Instructor, State Agricultural College,
Fort Collins, Colo.
 Mary L. Weaver, B. S., Ph. B., at Home.....Fort Collins, Colo.

1891.

Charles R. Evans, B. S., Merchant.....Fort Collins, Colo.
 Minnie E. McLain, B. S., Teacher.....Fort Collins, Colo.



MAIN COLLEGE BUILDING.

ALUMNI ASSOCIATION.

OFFICERS:

PRESIDENT,	-	-	-	-	GRACE ESPY PATTON
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SECRETARY,	-	-	-	-	LERAH STRATTON McHUGH
TREASURER,	-	-	-	-	WILBERT J. SICKMAN

EXECUTIVE COMMITTEE:

GRACE ESPY PATTON, President. WILBERT J. SICKMAN, Vice-President

LERAH STRATTON McHUGH, Secretary.

ELIZABETH LAWRENCE, HELEN RIGDEN, CHARLES R EVANS.

PREPARATORY YEAR.

Arithmetic.....	Wentworth
United States History.....	Johnston
English Analysis and Composition.....	
.....	Reed and Kellogg
Drawing:.....	Free Hand
Labor, two hours, farm.	

Arithmetic.....	Wentworth
United States History.....	Johnston
English Analysis and Composition.....	
.....	Reed and Kellogg
Drawing.....	Free Hand
Labor, two hours, shop.	

Arithmetic.....	Wentworth
Physical Geography.....	Houston
Word Analysis and Composition.....	Swinton
Drawing.....	Free Hand
Labor, two hours, garden.	
Military drill, daily.	
Rhetorical work, each term.	

FRESHMAN YEAR.

FIRST TERM.

Algebra Wentworth
 Botany.....Gray's Lessons
 Composition and Rhetoric Lockwood
 Drawing.....Geometric
 Labor, two hours, garden.

SECOND TERM.

Algebra Wentworth
 History and Literature.....Sheldon and Kellogg
 Book-keeping Meservey
 Agriculture.....Lectures
 Labor, two hours, shop.

THIRD TERM.

Algebra Wentworth
 History and Literature.....Sheldon and Kellogg
 Botany.....Gray, with Coulter's Flora
 Agriculture, Breeds of Stock.....Lectures
 Labor, two hours, farm.
 Military drill, daily,
 Rhetorical work, each term.

SOPHOMORE YEAR.

FIRST TERM.

Geometry.....Wentworth
 Chemistry.....Norton
 History and Literature.....Sheldon and Kellogg
 Drawing.....

Laboratory work, two hours, Chemistry and
 Physiology.

SECOND TERM.

Geometry.....Wentworth
 Chemistry.....Norton
 Physiology.....Martin
 Rhetoric.....Hill

Laboratory work, two hours, Chemistry and
 Physiology.

THIRD TERM.

Trigonometry.....Wentworth
 Surveying.....Hodgman
 Physiology.....Martin
 Chemistry.....Norton

Laboratory or } Chemistry, one-half term.
 Field Work, two hours: } Surveying, one-half term.
 Military drill, daily.

Rhetorical work, each term.

The Course from this point is separated into:

1. The Agricultural Course.
2. The Mechanical Course.
3. The Irrigation Engineering Course.
4. The Ladies' Course.

All leading to the degree of Bachelor of
 Science.

AGRICULTURAL COURSE.

JUNIOR YEAR.

FIRST TERM.

Agriculture.....	Lectures
Horticulture.....	Lectures
Physics.....	Deschanel
Zoology.....	Colton's Manual and Lectures
	{ Physics, two-fifths term.
Labor, two hours:	{ Horticulture, two-fifths term.
	{ Zoology, one-fifth term.

SECOND TERM.

Agricultural Chemistry.....	Storer
Geology.....	LeConte
Physics.....	Deschanel
Analytic Geometry.....	Wentworth
Labor, two hours:	{ Physics, two-fifths term.
	{ Chemistry, three-fifths term.

THIRD TERM.

Agricultural Chemistry.....	Storer
Geology.....	LeConte
Physics.....	Deschanel
Entomology.....	Lectures
	{ Physics, two-fifths term.
Labor, two hours:	{ Chemistry, two-fifths term.
	{ Entomology, one-fifth term.

SENIOR YEAR.

FIRST TERM.

Agriculture (Soil, Irrigation, Feeding) . . .	Lectures
Landscape Gardening, one-half term, {	. . . Lectures
Meteorology, one-half term, }	
Astronomy	Young
Psychology	Hill
Labor, two hours, farm.	

SECOND TERM.

Agriculture (Drainage, Cereals, Cross-Fertilization)	Lectures
Horticulture	Lectures
Logic	Gregory
Physiological Botany	Strasburger
Labor, two hours, garden.	

THIRD TERM.

Agriculture (Stock Breeding)	Lectures
Irrigation Hydraulics	Lectures
Political Economy	Mill
Thesis Work	
Labor, two hours, { Farm, one-half term.	
{ Garden, one-half term.	
Military drill, daily, throughout the course.	

MECHANICAL COURSE.

JUNIOR YEAR.

FIRST TERM.

Drawing.....	
Higher Algebra.....	Wentworth
Physics.....	Deschanel
Zoology.....	Colton's Manual and Lectures
	{ Physics, two-fifths term.
Labor, two hours,	{ Mechanics, two-fifths term.
	{ Zoology, one-fifth term.

SECOND TERM.

Drawing.....	
Analytic Geometry.....	Wentworth
Physics.....	Deschanel
Geology.....	LeConte
	{ Physics, two-fifths term.
Labor, two hours,	{ Mechanics, three-fifths term.

THIRD TERM.

Drawing.....	
Descriptive Geometry.....	Church
Physics.....	Deschanel
Geology.....	LeConte
	{ Physics, two-fifths term.
Labor, two hours,	{ Mechanics, three-fifths term.

SENIOR YEAR.

FIRST TERM.

The Steam Engine.....	Lectures
Differential Calculus.....	Taylor
Astronomy.....	Young
Psychology.....	Hill
Labor, two hours, Mechanics.	

SECOND TERM.

Transmission of Power.....	Lectures
Integral Calculus.....	Taylor
Logic.....	Gregory
Thesis Work.....	
Labor, two hours, Mechanics.	

THIRD TERM.

Study of Special Machines.....	Lectures
Special Chemistry.....	Lectures
Political Economy.....	Mill
Thesis Work.....	
Labor, two hours, Mechanics.	
Military drill, daily, throughout the course.	

IRRIGATION ENGINEERING COURSE.

JUNIOR YEAR.

FIRST TERM.

Hydraulics.....	Lectures
Higher Algebra.....	Wentworth
Physics	Deschanel
Zoology.....	Colton's Manual and Lectures
Labor, two hours, {	Physics, two-fifths term.
	Field Work, Irrigation, two-fifths term.
	Zoology, one-fifth term.

SECOND TERM.

Drawing.....	
Analytic Geometry.....	Wentworth
Physics.....	Deschanel
Geology.....	LeConte
Labor, two hours, {	Physics, two-fifths term.
	Geology, three-fifths term.

THIRD TERM.

Irrigation Engineering.....	Lectures
Descriptive Geometry.....	Church
Physics.....	Deschanel
Geology	LeConte
Labor, two hours, {	Physics, two-fifths term.
	Field Engineering, three-fifths term.

SENIOR YEAR.

FIRST TERM.

Hydraulics, Canals, and Canal Work.....	Lectures
Horticulture.....	Lectures
Differential Calculus.....	Taylor
Astronomy.....	Young
Labor, two hours, field work in Engineering.	

SECOND TERM.

Drawing.....	
Strength of Materials.....	Lectures
Integral Calculus.....	Taylor
Logic.....	Gregory
Labor, two hours, Mechanics.	

THIRD TERM.

Hydraulics.....	Lectures
Special Chemistry.....	Lectures
Political Economy.....	Mill
Thesis Work.....	
Labor, two hours, field work in Irrigation.	
Military drill, daily, throughout the course.	

LADIES' COURSE.

JUNIOR.

FIRST TERM.

Drawing.....
 German.....
 Physics..... Deschanel
 Zoology.....Colton's Manual and Lectures
 Laboratory work in Physics and Zoology.

SECOND TERM.

Stenography and Type-writing.....
 German.....
 Physics..... Deschanel
 Geology.....LeConte
 Laboratory work in Physics and Geology.

THIRD TERM.

Drawing.....
 German.....
 Physics..... Deschanel
 Geology.....LeConte
 Laboratory work in Physics and Geology.

SENIOR YEAR.

FIRST TERM.

German.....	Schiller
Landscape Gardening, one-half term, (	...Lectures
Meteorology, one-half term, }	
Astronomy.....	Young
Psychology.....	Hill

SECOND TERM.

German.....	Schiller
Drawing.....	
Horticulture.....	Lectures
Logic.....	Gregory

THIRD TERM.

Scientific German.....	
Drawing.....	
Political Economy.....	Mill
Thesis Work.....	

RECITATION SCHEME---FALL TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:40 a. m.	Arithmetic.	Algebra.	Drawing.	Hydraulics. Horticulture. Drawing.	Psychology. Horticulture.
9 a. m.	Freehand Drawing.	Composition and Rhetoric.	History and Literature.	Physics.	Landscape Gardening $\frac{1}{2}$. Meteorology $\frac{1}{2}$. Calculus.
9:50 a. m.	Word Analysis and Composition.	Botany.	Chemistry.	German. Higher Algebra. Agriculture.	German. Hydraulics, (anal., etc. The Steam Engine. Agriculture.
10:40 a. m.	U. S. History.	Drawing.	Geometry.	Zoology.	Astronomy.
11:30 a. m. to 12:20 p. m.	Military Drill.	Freehand Drawing. Military Drill.	Freehand Drawing. Military Drill.	Freehand Drawing. Military Drill.	Freehand Drawing. Military Drill.
1:30 p. m. to 3:30 p. m.	Farm.	Garden.	Chemistry.	Zoology 1-5. Physics 2-5. Field Work 2-5. Mechanics 2-5.	Mechanics 1. Engineering 1. Farm 1.

RECITATION SCHEME---WINTER TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	U. S. History.	Book-keeping.	Geometry.	Geology.	Horticulture. Transmission of Power. Strength of Material.
9 a. m.	English Analysis and Composition.	History and Literature.	Physiology.	Physics.	Calculus. Phy. Botany.
9:50 a. m.	Arithmetic.	Algebra.	Rhetoric.	Agricultural Chemistry. Drawing. German.	Agriculture. Drawing. Thesis Work. German.
10:40 a. m.	Drawing.	Agriculture.	Chemistry.	Analytic Geometry. Stenography, Typewrit'g.	Logic.
11:30 a. m. to 12:20 p. m.	Military Drill.	Military Drill.	Military Drill.	Military Drill.	Freehand Drawing. Military Drill.
1:30 p. m. to 5:30 p. m.	Mechanics. Two Divisions.	Mechanics. Two Divisions.	Chemistry 4-5. Physiology 1-5.	Physics 2-5. Chemistry 3-5. Geology 3-5. Mechanics. 3-5.	Mechanics. 1. 4-5. Testing Materials 1-5. Horticulture, 1.

RECITATION SCHEME---SPRING TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	Arithmetic.	Botany.	Physiology.	Agricultural Chemistry. Drawing. Irrigation Engineering.	Political Economy.
9 a. m.	Freehand Drawing.	Algebra.	Chemistry.	Physics.	Irrigation Hydraulics. Thesis Work.
9:50 a. m.	Physical Geography.	History and Literature.	Trigonometry.	Geology.	Irrigation Engineering Special Machines. Agriculture.
10:40 a. m.	English Analysis and (Composition.	Agriculture.	Surveying.	Descriptive Geometry. Entomology. German.	Thesis Work. Special Chemistry. German.
11:30 a. m. to 12:20 p. m.	Military Drill.	Freehand Drawing. Military Drill.	Military Drill.	Freehand Drawing. Military Drill.	Freehand Drawing. Military Drill.
1:30 p. m. to 3:30 p. m.	Garden.	Farm.	Physiology 1-10. Chemistry 2-5. Surveying 1-2.	Physics 2-5. Geology 3-5. Entomology 1-5 Chemistry 2-5. Mechanics 3-5. Field Engineering 3-5	Mechanics 1. Farm 1-2. Horticulture 1-2. Hydraulics 1.

DEPARTMENTS OF INSTRUCTION AND LABOR.

AGRICULTURE.

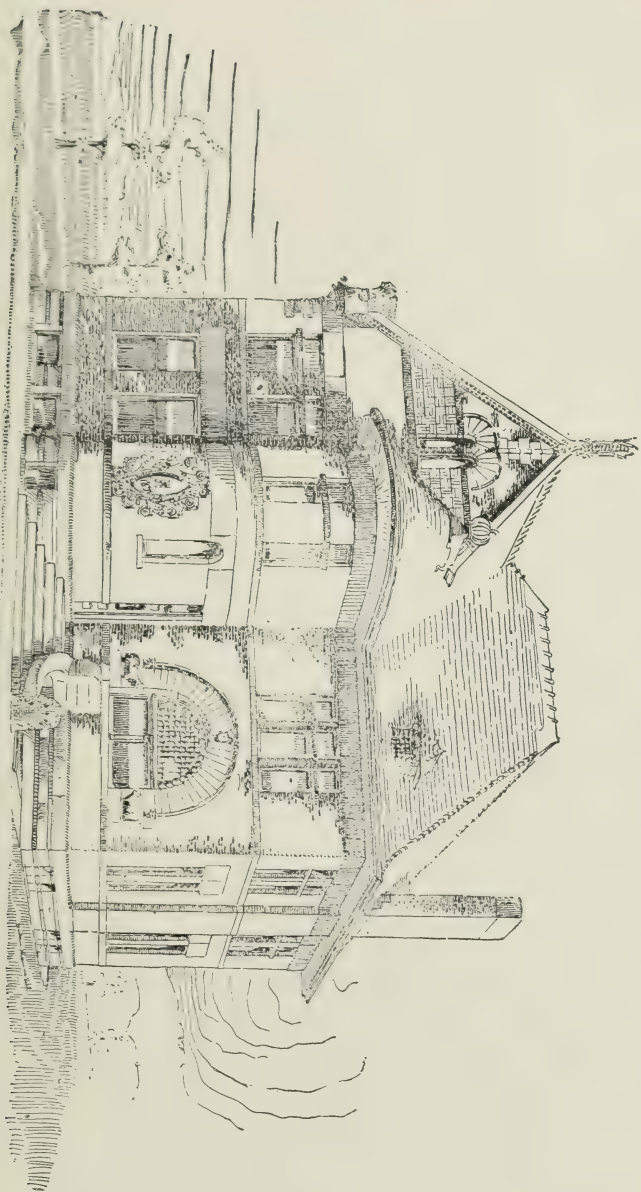
By means of intelligent experimental work, conducted on the College Farm and at the Experiment Station, in which student labor is given a prominent place, a very practical training is given.

A greater effort than ever before is being made by the authorities to give special attention to the course of instruction in the School of Agriculture, designing especially to educate the students for agricultural pursuits and scientific investigations. To this end a brief but thoroughly practical

WINTER COURSE

of lectures has been instituted. This course is valuable to farmers as well as their sons. The lectures continue four weeks and, in addition to those on Agriculture, include a lecture daily on Agricultural Chemistry, Botany, Horticulture, and Entomology. Special lectures are also solicited from experts in certain lines. For those desiring more knowledge in Agriculture and kindred subjects than is offered in the Winter lectures a

AGRICULTURAL HALL.



SHORT COURSE IN AGRICULTURE.

of two years is provided, with practical and instructive farm and garden labor, two hours daily, or laboratory or experimental work, and military drill during the entire course. The instruction consists of lectures, principally, sometimes text-book lessons supplemented by lectures on the elements, history, origin, and development of, and the general principles underlying, Agriculture; breeds of live stock, their adaptation to this country and modifications produced by climate, food, and treatment; the dairy in its many forms, together with the breeds for dairy purposes. Soils, preparation for seeding, harvesting, storing, and marketing, with which, those who desire this course, are more or less well-acquainted practically, will be considered but briefly.

THE REGULAR AGRICULTURAL COURSE.

The four-year course begins with the College year and in the Freshman Class. Agriculture is taught, beginning with the Winter term and continuing through the year. The instruction consists of the lectures of the Short Course above, the students of the two classes coming together to receive it.

In the Junior year, Fall term, the instruction in Agriculture begins with lectures on the history of Agriculture, fertilizing, and farm buildings. The breeds of live stock receive attention much of the year.

In the Senior year, first term, there is further instruction in regard to soils, and practical irrigation; and special instruction in the principles of stock-feeding. In the second term, the subjects of drainage, cereals, and cross-fertilization are treated.

In the third term, the subject of improved stock breeding and dairying, with practical work, is very thoroughly treated in a course of lectures and by text-book instruction.

The whole course will be supplemented by the labor on the farm, laboratory and experimental work, at the times noted in the schedule of exercises.

SHORT COURSE IN AGRICULTURE.

FIRST YEAR.

First term—1. Agriculture. 2. Botany. 3. Zoology. 4. Composition and Rhetoric. Labor, garden.

Second term—1. Agriculture. 2. Book-keeping. 3. Physics (elementary). 4. Drawing. Labor, shop.

Third term—1. Agriculture. 2. Botany. 3. Drawing. 4. Entomology. Labor, farm.

SECOND YEAR.

First term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Drawing. Labor, chemical laboratory.

Second term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Physiology. Labor, chemical laboratory.

Third term—1. Agriculture. 2. Agricultural Chemistry. 3. Physiology. 4. Irrigation Hydraulics. Labor, chemical laboratory. Military drill throughout the course.

PHYSIOLOGY

is taken during the second and third terms of the Sophomore year, Martin's Human Body being used as a text-book. Aside from the daily recita-

tions, students spend two hours, one day in the week, in the laboratory, to study human and comparative osteology and to dissect anæsthetized animals, for the purpose of examining the tissues and organs *in situ*.

The laboratory is especially well-equipped, possessing, among other things, a fine series of mounted skeletons, an expensive manikin (a life-sized model of the human body so dissected as to show nearly every tissue and organ that can be seen in an actual dissection), enlarged papier mache models of the eye, ear, brain, and other important parts, compound and dissecting microscopes, microtomes, and dissecting instruments.

ZOOLOGY

is taken the first term of the Junior year. This branch of natural science is taught by means of lectures and actual demonstrations in the laboratory, Colton's Practical Zoology being used as a guide. Each student is furnished with typical forms of the different branches of the animal kingdom, which he studies carefully, making drawings and taking notes. In this manner, the student acquires a practical knowledge of the structure and classification of animals, that he cannot obtain by a mere study of books.

Microscopes, dissecting tools, and all necessary equipment for laboratory work are furnished free, each student being required to care for his own instruments.

ENTOMOLOGY

is taken in the third term of the Junior year in the Agricultural Course, and is taught by lectures and laboratory work. Each student gets together and

classifies a collection of insects representing all of the orders, and traces at least one species through all its transformations, taking notes and making drawings and descriptions.

Particular attention is given to the economic features of this study. Those insects known to be injurious are given special attention, and the students are made familiar with their habits and natural history. Students also prepare the principal insecticide substances and apply them for the destruction of insects.

In connection with this department are a good apiary and honey house, thoroughly equipped with the most modern appliances, and students so desiring are taught and allowed to put into practice all the manipulations of the apiary.

Students taking this study are required to purchase Packard's Entomology for Beginners.

BOTANY.

The study of Botany begins with the Freshman year. The Fall term is devoted mainly to Structural Botany. The plant as an individual is studied as to its part, or organs—the relation each part bears to the whole—the variations in the parts, and the uses they serve. Roots, branches, buds, leaves, flowers, and fruits are placed in the students' hands, and the technical descriptive terms are learned by applying them directly to the plants.

Gray's Lessons is used as text to supplement the instruction from the plants themselves. A few lectures on classification and the relations of plants to each other are given toward the close of this term.

The Spring term of the same year is devoted to Systematic Botany. Dissecting microscopes and necessary tools are furnished and plants are each day supplied for analysis. Students are taught the application of the principles learned during the first term, so that they may understand the methods of determining the names of plants. The great variety of plants at hand enables the student to become familiar with all the leading natural orders. Written descriptions of the plants analyzed are required. Coulter's Manual of Rocky Mountain Botany is the text-book used.

PHYSIOLOGICAL BOTANY.

In the Winter term of the Senior year, the Agricultural students study vegetable physiology and the minute structure of plants, using as a text book Strasburger's Practical Botany.

Compound microscopes are supplied and the Botanical laboratory is open to members of the class two hours each afternoon.

An herbarium of native and foreign plants and the greenhouse furnish material for study.

A portion of this term is devoted to Cryptogamic Botany, special attention being given to rusts, smuts, and mildews, injurious to plants.

The laboratory is well-equipped with books of reference and with all necessary apparatus and reagents.

HORTICULTURE.

Instruction in Horticulture is given by lectures. The first course of thirteen weeks, in the Fall term of the Junior year, deals mainly with methods. Under the general head of Vegetable-gardening

the principle topics considered are—the best soil and situation for a garden; manner of laying out a garden; irrigation of garden crops; rotation of crops; methods of planting and management; composts and commercial fertilizers; care of tools; construction, management, and uses of hot-beds and cold frames; harvesting, marketing, and storing vegetables.

Brief historical notes, and full cultural directions, are given concerning all of the vegetable plants commonly grown in gardens.

Small fruit culture is next taken up; each kind is considered in detail as to its history, propagation, cultivation, harvesting, marketing, the best varieties, and the diseases to which it is subject.

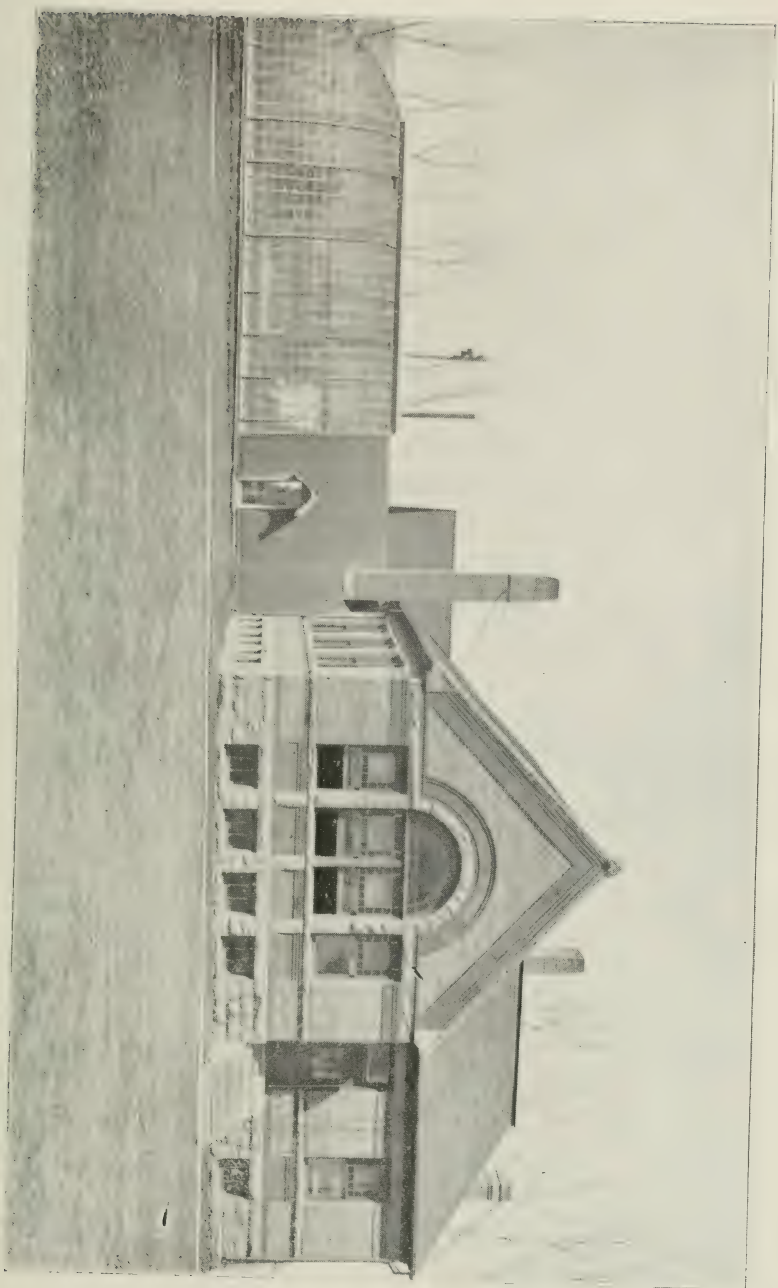
Then follows a series of lectures upon methods of plant propagation, including a thorough discussion of budding and grafting.

Plants, tools, and other appliances are provided for class-room use in giving practical illustrations of the subject treated.

A portion of this term is devoted to Forestry. Lectures are given on the gathering and preservation of forest-tree seed, the planting of seed, and the care of seedlings; on the value of trees for timber and ornament, for hedges, screens, and shelter belts.

A second course of lectures during the Winter term of the Senior year treats of the theory of Horticulture, and considers in detail the underlying principles of garden practice; lectures are given upon the history of cultivated plants, variation of plants under cultivation, as influenced by climate, latitude, altitude, and general surroundings; cross-

HORTICULTURAL HALL AND CONSERVATORY.



fertilization and hybridization. Pomology is then taken up, and the theory and practice of orchard management considered in detail.

Floriculture is also treated on such topics as the construction, heating, and management of green-houses, the propagation, cultivation, and management of green-house plants for commercial or private purposes.

LANDSCAPE GARDENING.

One-half of the Fall term of the Senior year is allotted to this study. The general principles of the art are taught by lectures and practical instruction given in the selection and laying out of city and country places. The principal topics are, the selection of a place, the location of buildings, drives, and walks, what to plant and how to plant. The works of Downing and Kemp are used as books of reference.

CHEMISTRY.

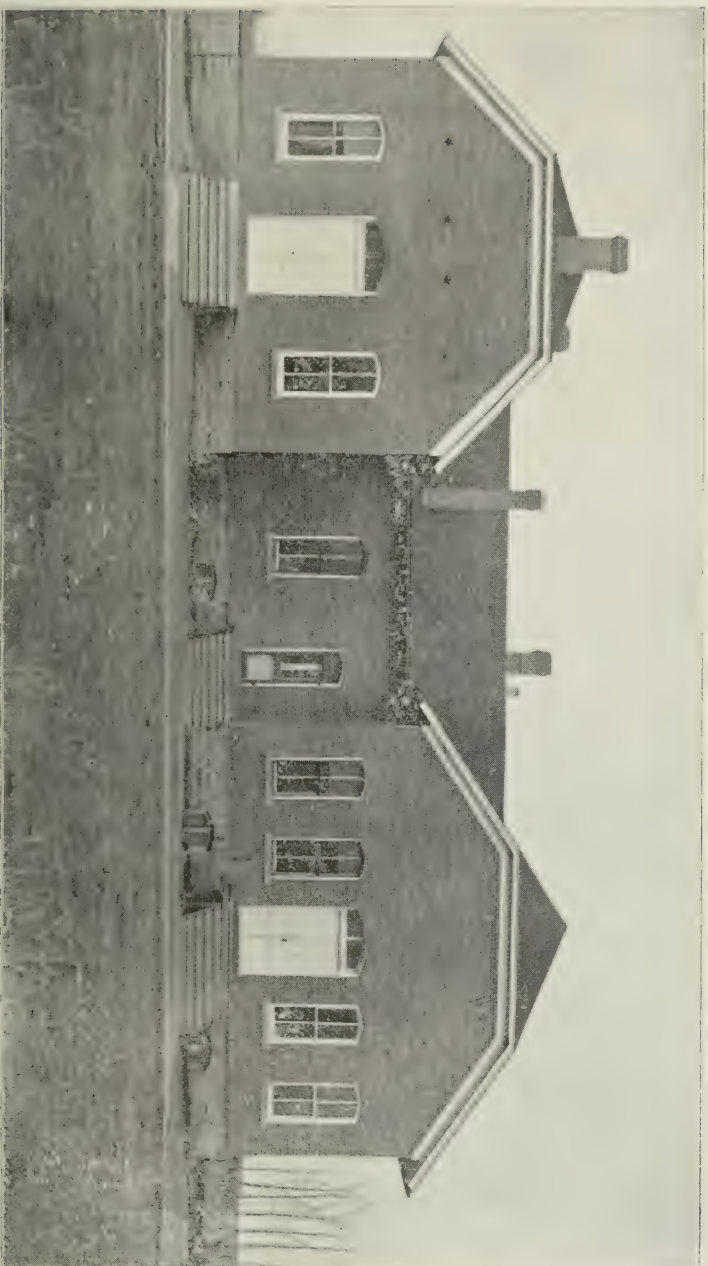
It is the object of this department to give the student an opportunity to acquire a thorough mastery of the elementary principles of chemical science. To attain this object, theory and practice are made to go hand in hand. In the first term of the Sophomore year, the class listens to a series of lectures, accompanied by text-book work, upon the general theory of the science, its history and development. In this course of lectures are discussed the subjects of acids, bases and salts, and the principles of chemical philosophy. The natural history, chemical and physical properties of each of the elements are discussed in detail, the whole being illustrated by experiments. While taking

this course, the student spends two hours each day in the chemical laboratory, repeating the experiments shown in the class room, and making others which may be suggested, thus familiarizing him with the various forms of compounds, the marked distinctions between the different classes of salts, the use of chemical nomenclature and the manipulation of apparatus. Practice in the use of the blow pipe accompanies this work, and an insight into determinative mineralogy is thus acquired. The use and application of the spectroscope are also taught. The students in the laboratory, at the end of the first term, are examined in the text-book (O'Brine's Laboratory Guide) and by analysis of *unknown bodies* in the dry way.

In the second term of the Sophomore year, the Inorganic Chemistry is finished and Organic Chemistry is taken up. The laboratory work continues four-fifths of the term, and the student takes up the tests for the bases and their separation; also, the tests for the acids and their separation. The students are examined at the close of the second term by unknown bodies, composed of mixtures of the several groups of bases and acids.

In the third term of the Sophomore year the class completes Organic Chemistry, with some practice in Chemical Physics and Stoichiometry. In the laboratory, the separation of the bases and acids is reviewed, tests for the poisons are made, their separation from organic mixtures is worked out, and the analysis of organic compounds is carried on.

In the Agricultural course, in the second and third terms of the Junior year, the students listen to a course of lectures upon Agricultural Chemistry,



CHEMICAL LABORATORY.

in which are discussed such subjects as the following: Relation of Chemistry to Agriculture, the literature of Agricultural Chemistry, elements of plant growth, their relative abundance and importance, the atmosphere, the soil, fertilizers, etc. Storer's Agriculture, Johnson's "How Crops Grow" and "How Crops Feed" are used as reference books. Laboratory work accompanies the lectures and work in the text-books. The study of quantitative analysis begins in the gravimetric way, and, after some little practice, students will be directed in any line of special work they may desire.

In the third term of the Senior year of the Mechanical course, the students study the chemistry of alloys, iron, steel, and fuel, and in the laboratory they are taught the analysis of these bodies, including furnace gases. Students have the use of all the apparatus described in Winkler and Lunge's "Technical Gas Analysis."

In the third term of the Senior year of the Irrigation course, the students study the chemistry of building materials, using Wagner's Chemical Technology as a guide. In the laboratory they have the analysis of soils and water. Students who desire it, will have an opportunity to see, in the Station laboratory, the analysis of food, blood, poisons, urine, water, coal, minerals, soils; also assaying and gas analysis. Keeping in mind the object for which our college is founded, we have so planned our Chemical course as to prepare the student for the general application of Chemistry to the industrial arts, while seeking thoroughly to ground him in the application of science to agriculture. A chemical laboratory, fitted up with modern appliances, balance-room, foul-gas room,

and desks for thirty-six students, is ready for the classes.

Students have access to the following current chemical literature: *Chemical News*, *Analyst*, *Journal of the Chemical Society*, *Journal fur Landwirthschaft*, *Journal of Analytic Chemistry*, and a complete set of "Fresenius Zeitschrift fur Anaylt. Chemie."; also the following works of reference: Watt's Dictionary of Chemistry, the works of Roscoe, Schorlemmer, Bloxam, Tidy, Miller, Stricker, Pinney, Fowne, Wagner; in analysis, the works of Fresenius, Wills, Classen, Prescott, Thorpe, Wohler, Crooke's Select Methods, Allen's Organic Analysis, Hart, Sutton, Blythe, etc. A three-horse power water-motor is used to run an exhaust fan to ventilate the laboratory and to do other work.

GEOLOGY.

Recognizing the fact that Chemistry and Geology are the foundations of agricultural science, the subject of Geology receives corresponding attention. The second term of the Junior year, LeConte's Elements of Geology is taken up and continued during the year. The students work two hours, three days per week, in the laboratory. Lectures on Economic Geology are also given, William's Manual being the guide. Frequent visits to the mountains and quarries illustrate the practical application of dip, strike, fault, formations, stratifications, and elevations by barometer, thermometer, and level, whenever field work is practicable. At the end of the third term the students are required to identify and describe twenty-five rocks or mineral specimens.

The following works of reference are accessible to the students: Croll, Bischof, Lyell, Dana, Nicholson, Geikie, Van Cotta, Platner, Brush, Elderhorst, and the geological reports of other states. Contributions to this department will be thankfully received and due credit will be given.

HISTORY, LITERATURE, AND LANGUAGE.

HISTORY AND LITERATURE.

During the last two terms of the Freshman year and the first term of the Sophomore year, Sheldon's History and Kellogg's Literature are studied together, so that each historic period and the authors connected with it may be taken at the same time. The work is supplemented by lectures.

The study of English Literature includes critical readings of selected authors, and special attention to the writings of the five great English poets and to the works of some great author, for special reading during each term. A careful oversight of all outside reading is attempted and every effort is made to promote a taste for good literature.

GERMAN.

German is studied during the Junior and Senior years. The great increase of the German population in America during the last thirty years has made a practical knowledge of the German language a business commodity as well as an elegant accomplishment. A course of two years in German is not sufficient to give a mastery of the language, but the limited time of study is occupied in giving, as far as possible, power to converse in every-day life. The recitations are conducted in

the language studied, and much stress is placed on the ability to converse, as the most certain way to read and use German effectively. It is thought that the study of some language besides our own is of great assistance to the student as a means of mental growth. During the Junior year, Worman's First and Second German books are used, and Andersen's Selected Fairy Tales is used as a basis for conversation. During the last year, the time is equally divided between technical and literary German. A play from Schiller and a selection from Faust are read, with practice in reading at sight, and the study of some German scientific work is pursued. The German periodical, *Die Gartenlaube*, is placed in the library for the benefit of those students who are studying German.

ENGLISH AND STENOGRAPHY.

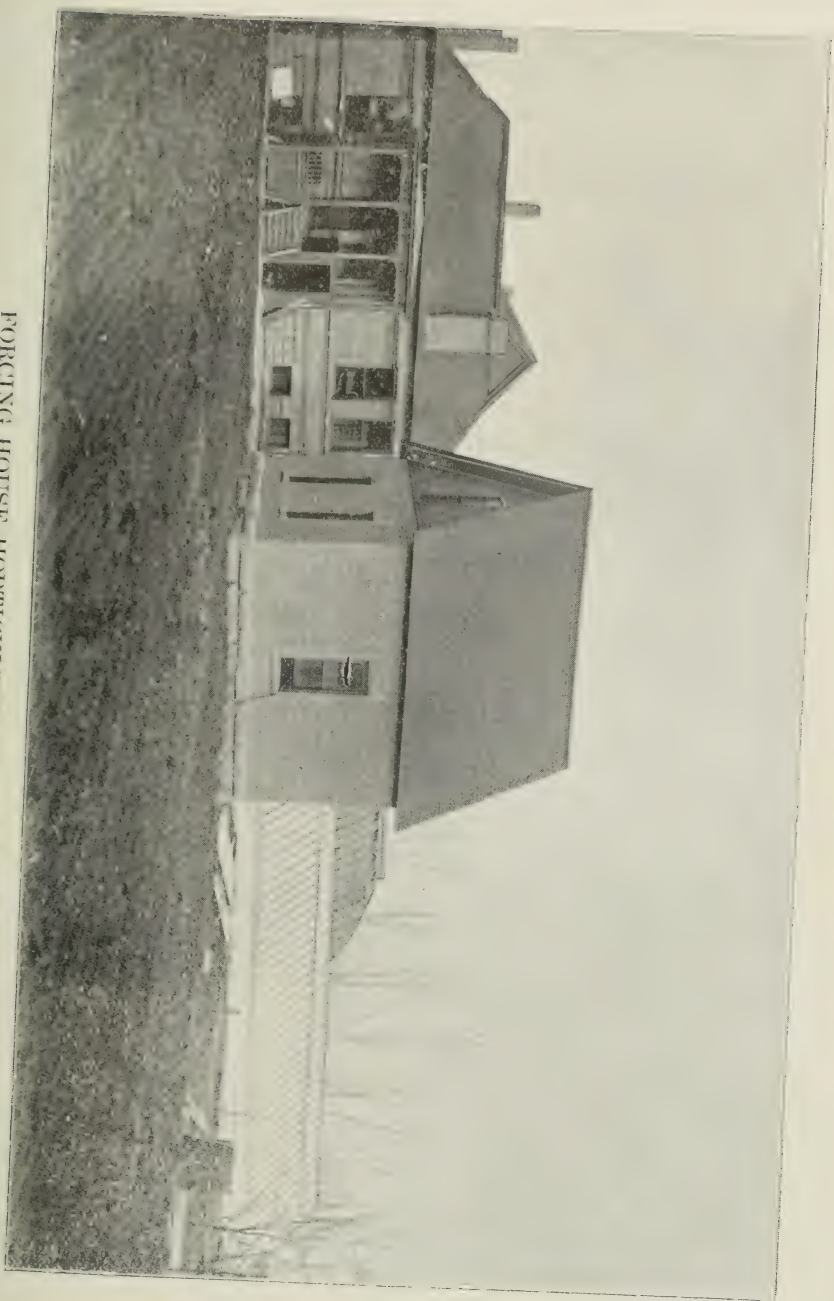
ENGLISH.

The study of English Analysis is pursued during the Fall and Winter terms of the Preparatory course, followed by Word Analysis during the Spring term.

The subject of Composition is continued throughout the Preparatory year, the subjects of punctuation, capitalization, structure and arrangement of sentences, and the fundamental principles of style receiving special attention.

During the Fall term of the Freshman year, the subject of Composition and Rhetoric is continued, with Lockwood's Lessons in English for a textbook. It is the object of this work to enable the student to acquire skill in the logical arrangement of his thoughts, and to express them in a clear and effective manner.

FORCING HOUSE, HORTICULTURAL DEPARTMENT.



Library

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Advanced work in Rhetoric is required of the Sophomore class during the Winter term. The laws of mind and language as related to effected discourse, is a subject which receives special consideration.

Composition writing—essays, orations, etc., forms an important feature of the entire course in English.

Public rhetorical exercises are required of each student.

STENOGRAPHY.

The subjects of Stenography and Typewriting are pursued during the Winter term of the Junior year.

The object of this course is to impress upon the mind of the student the importance of a knowledge of the English language and a correct use of it in business life, as well as to enable him to become an efficient stenographer and type-writer.

MATHEMATICS.

The instruction offered by this department is designed to conform to the general aim and purpose of the institution; accordingly, only those branches of pure mathematics are taught which bear directly upon the curriculum and which are a necessity in the every-day life and business of the well-rounded business man.

Withal, the course as pursued is very nearly equal, by subjects, to that pursued in the ordinary classical course of other colleges, but is less in detail, while the attention given to applied mathematics, including surveying and irrigation canal engineering, is much greater.

ARITHMETIC.

Students pursue, throughout the Preparatory year, the subject of Arithmetic, the first and second terms being devoted exclusively to decimal notation and analysis, the third term to the shorter practical methods of commercial operations.

ALGEBRA.

The study of Algebra is begun in the first term of the Freshman year and continued through that year. The first term is devoted mainly to the fundamental principles and operations governing the literal notation and factoring, the endeavor being so thoroughly to ground the student that the succeeding operations may be more of an unfolding process than a task.

The second and third terms' work is devoted to the study of Algebra proper, the Quadratic Equations, and so much more as the ability of the average class will allow.

GEOMETRY.

Geometry is placed in the first and second terms, Sophomore. Problems in Mensuration and original exercises will be added to the text-book work, giving the student frequent practice in the application of principles already acquired and fixing firmly the knowledge gained.

TRIGONOMETRY.

occupies the third term, Sophomore. Plane Trigonometry, occupying a more practical place in the general run of business, is the only part taught.

Higher Algebra is taken up by the Juniors of the Mechanical and Irrigation Engineering courses, in their first term. Reviewing Quadratics and the

Calculus of Radicals, the term's work will cover the theory of Equations, the theory and use of Logarithms, etc., as complete a purely Algebraic course as will fit the student for the intelligent study and use of Algebraic forms and terms in his subsequent work.

Following Algebra, in the second term, Junior, so much of Analytic Geometry as is necessary in Physics, Astronomy, and Hydraulic Formulæ, will be given in daily recitations.

Descriptive Geometry, Orthographic Projection, Linear Perspective, Shades and Shadows, etc., will occupy the third term.

Astronomy occupies the first term, Senior. Owing to the want of astronomical instruments, Descriptive Astronomy alone is taught.

The Calculus—Differential and Integral—will take the first and second terms respectively of the Senior year. The subject will be taught by the infinitesimal method rather than by the theory of limits, which is more adapted to the scholar than to the college student, and will be sufficiently full to enable him to solve, discuss, and use the Calculus of any ordinary work on strains used in the average technical course.

PRACTICAL MECHANICS.

This department has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades, or manufacture salable articles; to do so would require that the student be kept on the kind

of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any one complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of *how* a tool or machine should be used and the *manner of laying outwork* for it are thoroughly taught.

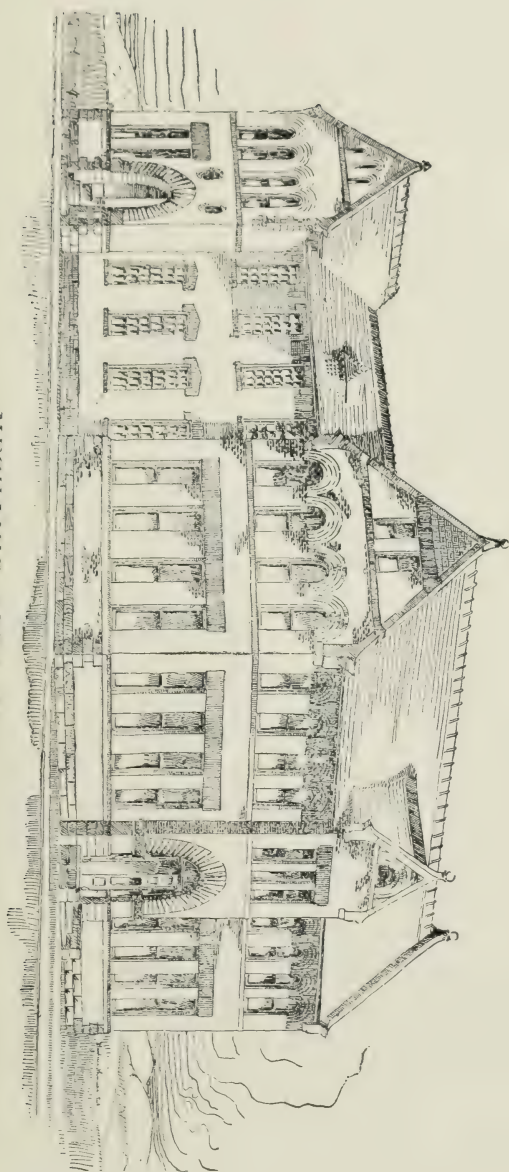
Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by this training and he will the more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

The shop instruction is divided into courses as follows, and in each course will be given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.:

COURSE OF LABOR.

Bench work in wood	13 weeks
Wood turning.....	12 "
Pattern making.....	12 "
Molding and casting.....	12 "
Iron and steel forging.....	13 "
Machine work in metals.....	12 "
Vise work in metals.....	12 "

MECHANIC ARTS HALL.



This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First—The use of planes in joining, smoothing and getting the piece out of wind, lining off and the use of saws in cutting across and with the grain and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle.

MACHINE WORK IN WOOD.

In connection with this course, with the use of tools, will be given the most rapid and economical method of selecting and preparing the wood for the machine. There will be given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools; examples in chuck work in separate and combined pieces; how to turn a ball.

PATTERN MAKING AND FOUNDRY WORK.

After becoming familiar with bench and machine work in wood, an application of both is made, by constructing patterns with due regard to shrinkage, draft, and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There will be given examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry room by the students, where molds and cores are made, and castings are made in iron or brass.

In the foundry the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

MACHINE WORK IN METAL.

The care and management of the tools, their construction, etc.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals. Centering and straightening work; straight turning and squaring; boring; making and fitting joints; chuck work; screw cutting, inside and outside; drilling, tapping, and reaming; boring with boring bar and use of center rest; polishing and finishing; hand tool work.

DRAWING.

Free-hand copy and dictation; free-hand model and object drawing; light and shade; geometric problems; orthographic and isometric projections and projection of shadows; developement and intersection of surfaces; wood carving, diaper, incised and relief.

Persons having parts of machines, patterns, small models, or working drawings, may, if they choose, donate the same to the department, and thereby will confer a great favor upon the College, and especially upon the department.

MILITARY SCIENCE.

For instruction in Military Tactics, the students are formed into companies. The system of instruction being that in use in the United States Army, is calculated to form the habit of prompt obedience, foster the natural martial instinct and prepare the students, should necessity arise, to organize a company or battalion of our National militia.

The drill includes the school of the soldier, company and battalion, in infantry tactics, supplemented by lectures on the art and science of war.

Instruction in Artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill, etc. For use in drill, the department has two three-inch rifled field pieces, from the Rock Island Arsenal, and seventy cadet rifles with accoutrements.

Military drill is required of each male student, unless excused for physical disability or by special vote of the Faculty for good and satisfactory reasons. Each cadet is required to purchase a copy of the standard United States Infantry Tactics, for study and reference. He is also to provide himself with a uniform, modeled somewhat after the uniform of the regular army. It is neat and durable, consists of blouse, pantaloons cap, and gloves, and costs about twenty dollars.

In the Fall and Spring terms, a period of forty-five minutes daily is devoted to outdoor maneuvers. During the winter, the new armory is used, and a portion of the time is devoted to recitations in Tactics and to lectures. When possible, an encamp-

ment will be held at the close of the Spring term for practical instruction in guard and field duty.

PHYSICS.

Instructions in Physics is given by text-book, supplemented by lectures where necessary. The study continues throughout the Junior year, and takes up the important sciences of Mechanics, Heat, Light, Sound, and Electricity, especial attention being given to the latter in view of its modern applications. Besides the instruction in the class-room, each student is required to take a course in laboratory work, four hours weekly, extending throughout the year. This course is intended to give the student an opportunity to perform many of the experiments himself, as well as to teach him the methods of determining physical constants and to give him skill in experimentation. A good collection of physical instruments, including copies of the principal standards in length, weight, mass, and electricity, gives the student the necessary means for making the course a profitable one.

METEOROLOGY.

Instruction in Meteorology is given in a course of lectures extending through six weeks in the Senior year. The course includes a discussion of Practical Meteorology, including an explanation of the instruments used, the laws of storms, the characteristics of climate, and the elements of Agricultural Meteorology.

SURVEYING.

Surveying, which is taught in the last term of the Sophomore year, includes the theory, use, and adjustments of the instruments used in surveying;

the methods of the United States Surveyors; the location of lost corners; field work and mapping. For one-half of the term the class has practical work in the field which makes the students accustomed to the use of instruments and the methods of work. There is also acquired such elementary knowledge of the measurement and laws of water as is useful to every citizen in an irrigated country and as is expected of every surveyor.

AGRICULTURAL HYDRAULICS.

In the last term of the Senior year, for the students of the Agricultural course, a course in Agricultural Hydraulics is offered. This includes a discussion of the general principles of irrigation; the methods of irrigation; construction of canals and structures for irrigation; flumes, reservoirs, etc. The course is intended to be a general one, covering the general principles and methods of irrigation, and useful to those directly connected with agriculture.

The course as given in the second year of the Short course in Agriculture, and in the Winter course, will be essentially the same with such modifications as may be necessary because of the special purpose of the course and the preparation of the students.

IRRIGATION ENGINEERING.

Those who desire to fit themselves for water commissioners, superintendents, canal superintendents, or who may desire to secure a basis for work as Irrigation Engineers may enter the course of Irrigation Engineering in the last two years of the College course. It is the object of the course to give the student as thorough ground work as

circumstances will allow in the theoretical and practical knowledge of hydraulics, and of engineering as applicable to the special circumstances of irrigation. The course in the Junior and Senior years is planned with this end in view. The special instruction in Civil and Irrigation Engineering extends through five terms of these two years, and covers by a course of instruction, principally in lectures, the principles of ditch and canal engineering; reservoir and reservoir construction; fluming; canal structures, as headgates, drops, siphons, etc.; theoretical and practical hydraulics; bridge building; trusses, etc. The whole course is accompanied with field work sufficient in amount to make the student familiar with the instruments and their use. Many of them have practical work in the surveying of reservoirs, canal lines, gauging of streams, and other similar work. Where this work is approved by the Professor of Engineering it is accepted in place of assigned exercises.

The Department has accessible in its own collection and that of the Professor of Engineering a large collection of photographs and plans of irrigation structures of this and other countries. In the present condition of Irrigation Engineering, and the lack of text-books, the collection is especially useful. There is also available one of the best collection of publications on irrigation in the United States, covering American, French, Italian, Egyptian, Spanish, and Australian practice.

Besides the engineering instruments, the Department possesses current meters and an experimental apparatus for measuring the discharge through openings of considerable size. This is

supplied with water from a canal passing through the College grounds.

STRENGTH OF MATERIALS.

One term is given especially to the study of the Strength of Materials, including the theoretical and experimental study of the materials used in engineering. The Department has a machine for the testing of cements, and a large testing-machine whose capacity is 50,000 pounds, which are used in connection with this course.

ELOCUTION AND ORATORY

is required in the Preparatory, Freshman, Sophomore, Junior, and Senior years. The work is devoted to voice production, articulation and pronunciation, analytic and expressive reading, gesture, debates, platform criticisms, and oratorical drill.

As a matter of health, the study of elocution is invaluable, as it teaches, through voice production, the proper use of the organs for breathing. It will make one a better business man, it will fit one better in every way for the different walks of life, it will teach him to study his fellow men, and it will lead him to find the best of himself and impress it upon them.

The study of Elocution and Oratory is, through the aid of the world's great minds, continued long after the student has said farewell to his Alma Mater—it is health-giving and refining.

PHYSICAL CULTURE

is not required, but many avail themselves of the instruction offered in the Gymnasium. The young men are instructed by the Professor of Military Tactics, while the young women are under the care of the special instructor of elocution.

The Armory has been fitted up for the present with such useful apparatus as oval chest-expander, pulleys, stretchers, clubs, dumb-bells, wands, pummeling bag, boxing gloves, foils, traveling rings, trapeze, rowing machine, stationary and teeter ladders, etc., with the promise of being more complete in time.

The course of Physical Culture for the young women will consist of the best of the Sargent School, Swedish Movement, and Delsarte System, from light work to more heavy work upon the apparatus, all taught from physiological laws; stooping shoulders are made straight, narrow chests made broad, the weak made strong, the strong made agile and graceful.

PSYCHOLOGY.

Hill's "Elements of Psychology" is the text-book in use.

The subject is taught principally by recitations, discussions, and lectures. Much oral work is done in connection with recitations based upon the text. Supplementary reading along the lines of recent investigations is encouraged. Contributions to the science, found on the pages of the best periodicals, supplement the text-book statements. The lives and writings of representative thinkers in the domain of metaphysics afford interesting topics for much oral instruction and library investigation. Something is done to point out the sources whence a knowledge of the history of psychology can be obtained. The relations of the subject to the work of the teacher are pointed out and made themes for study and discussion.

LOGIC.

This study is taught by recitations, discussions, and original exercises. Careful consideration is given to the principles of deductive reasoning. The syllogism is analyzed. The principles and methods underlying scientific investigation are made subjects of study, and the basis of class discussion and essay work. Practical application of what the student learns in the study of Logic is made in testing the validity of arguments and detecting fallacious reasoning.

The history of the science is considered and something learned of the writers whose works thereon have recognized merit. Gregory's "Practical Logic" is the text-book used.

POLITICAL ECONOMY.

The text-book in use is Mill's "Principles of Political Economy." Access is had to other standard works, such as Walker's "Science of Wealth," Bowen's "American Political Economy," Perry's "Elements of Political Economy," and Gregory's "Political Economy."

The important questions with which the subject deals are treated without attempt to uphold any narrow, one-sided view. Economic questions of particular importance to the people of the United States are given special prominence in the recitations, discussions, and lectures. These are considered from a historic and an impartial standpoint.

CIVIL GOVERNMENT.

The study of the Constitution of the United States and the State of Colorado both conjoin to broaden the mind of the student and better fit him

to take his place among the citizens of this state or other states. These, with other subjects relating to civics, will be given by a series of exercises in the Senior year.

PUBLIC RHETORICALS.

Each student enrolled shall render at least one public rhetorical exercise each College term, unless excused by Faculty vote. These exercises shall consist of declamations and recitations for the younger classes, and original exercises for the advanced students. The importance of these exercises to the student can scarcely be over-estimated, as every one should have a training which will enable him to present his views upon any question in public in an intelligent and a pleasing manner.

DEGREES.

Upon those who complete the work of any one of the four courses in a satisfactory manner, the State Board of Agriculture, upon recommendation of the Faculty of Instruction, confers the degree of Bachelor of Science.

The degree of Master of Science will be conferred upon all graduates of the College who pursue thoroughly some line of work after graduation, and who submit an acceptable thesis on the same.

THE STATE AGRICULTURAL EXPERIMENT STATION.

The Central Station is located at the College, Fort Collins, Colorado, Larimer County. Four Sub-Stations are provided for, three of which are in operation and doing satisfactory work. They are the San Luis Valley Station, at Monte Vista, Rio Grande County; the Arkansas Valley Station,

at Rocky Ford, Otero County; and the Divide Station, at Table Rock, El Paso County. The fourth, to be in Delta County, has not been put in operation yet, as it has not been located.

This department was created in acceptance of the conditions of the Hatch Act, and the work has been arranged in conformity with its provisions.

Bulletins are issued quarterly, or oftener, and reports annually, which are distributed to those who request them as long as the editions last. Address the Director, Fort Collins.

In connection with this work, the Secretary of the State Board annually distributes to applicants, seeds of such varieties as he may obtain from the Experiment Station or elsewhere. All cannot be supplied, but such seeds as we have will be sent where, in our judgment, they will do the most good. The only compensation asked or expected is a careful report of results, with notations on altitude and irrigation, kind and condition of soil, time of planting, and mode of cultivation.

EXPENSES.

The expense of a student attending the State Agricultural College is slight, as any student who can pay his traveling expenses and board, and in addition, can buy his clothes and books, can attend. All fees were abolished by the Board of Agriculture, January 1, 1891.

Rooms for young men may be had in the Dormitory in the order of application. The Dormitory building is heated by steam and lighted by electric lights. Each room contains a bedstead; all other furniture must be supplied by the students. In order that good care shall be exercised

over the property, each student is required to make a deposit of \$2.50 with the Secretary. At the end of the term, if no damage is done other than ordinary wear, the sum is returned to the depositor.

YEARLY EXPENSES.

Board (September 5 to June 8), 40 weeks.....	\$120.00
Heat, light, and room rent.....	14.00
Laundry expenses (approximately).....	20.00
Books (approximately).....	12.00
Total.....	\$166.00

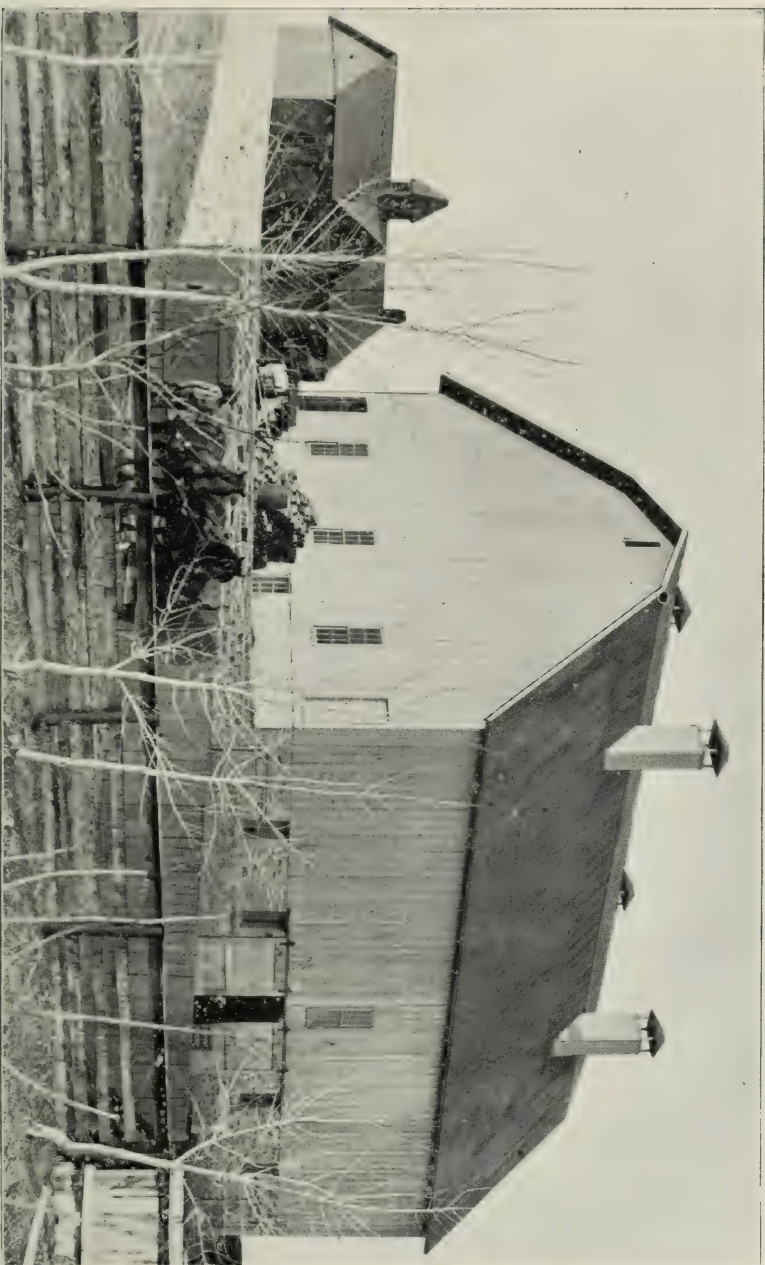
In this estimate, clothing and traveling expenses are not included. The wages of students, at 15 cents per hour, may be used to lessen the expenses, so that \$150.00, in addition to clothing and traveling expenses, will take one through the College year.

ADVANCE PAYMENTS.

Board must be paid to the Steward monthly in advance. Other expenses and the deposit must be paid to the Secretary in his office. No reduction is made unless for absence of a full week at one time. In such case a reduction of 50 per cent. is allowed. An enforced absence of two consecutive weeks entitles the absentee to full reduction of time. A student leaving at any time has any excess or balance to his credit refunded to him, on settlement.

Board and lodging in private houses can be had at prices varying from \$4 to \$5 per week, according to accommodations and location. It is possible for students to form clubs and board themselves, thereby materially reducing expenses.

The total cost, for each student, per year, need not exceed \$200. This sum does not cover the cost of clothing or the money paid in traveling



COLLEGE BARN.

expenses. Students reduce the total cost by money earned by labor performed under College regulations. Many students do not spend more than \$100 per year; and a few thoroughly-in-earnest ones pay their way through College with money of their own earning.

CONDITIONS OF ADMISSION.

The College admits students of both sexes, provided they pass a satisfactory examination in the common branches, viz.: Reading, Writing, Spelling, Grammar, Arithmetic, and Geography; and provided they are at least 15 years of age.

The work of the Preparatory year is, in part, a thorough review of Grammar and Arithmetic, with the additional subjects of United States History, Physical Geography, Elocution, Composition, Word Analysis, and Drawing.

Candidates for admission should appear for examination on the dates announced on the calendar of exercises, preferably at the opening of the College year. Those entering later, or proposing to take advanced work, must be prepared to take a more thorough and prolonged series of examinations.

EXAMINATIONS FOR ENTRANCE.

Examinations for admission to the Freshman class are as follows:

In *Reading*, candidates must be able to read understandingly, and with proper accent and emphasis.

In *Writing* and *Orthography*, they must be able to write from dictation, sentences from standard pieces of English literature, both prose and poetry, sufficient in number to test their qualifications in Penmanship and Orthography.

Candidates will also be required to pass examinations in *Arithmetic*, *Grammar*, and *Descriptive Geography*.

Candidates for advanced classes or work must be examined on all previous work, or bring certificates of standing from schools having an equivalent grade of work.

Those desiring to enter the Preparatory class must show some knowledge of Grammar, and be examined in Arithmetic, as far as interest, and in Descriptive Geography. They must show a general knowledge sufficient to enable them to take up the work.

Specimen questions follow, so that the candidates may gain an idea as to what will be required upon presenting themselves for entrance to the Freshman class.

Similarly thorough examinations will be made for admission to higher classes in all subjects completed by them:

ARITHMETIC.

1. A rectangular block 8.4 inches wide and 4.5 inches thick contains .267 $\frac{31}{32}$ cubic feet; how long is it?

2. What decimal—four places—of an acre is a lot 12 rods, $4\frac{1}{8}$ yards long and 8 rods, $2\frac{3}{4}$ yards wide?

3. Reduce $83\frac{5}{7} \div 61\frac{3}{4}$ times $29\frac{7}{8}$ to decimal form, correct to four places.

4. A man who owned $\frac{5}{7}$ of a mill sold $\frac{1}{4}$ of his share and divided the money he received among his 2 sons and 3 daughters so that each son received $3\frac{1}{3}$ times as much as each daughter. If each son received \$500, what was the mill worth?

5. What fraction of a mile is in $29\frac{1}{3}$ yards?

6. What is the value of a tract of land 24 rods, $2\frac{3}{4}$ yards long and 16 rods, $3\frac{2}{3}$ yards wide at \$64 an acre?

7. Multiply 1-16 of a million by 1-16 of a millionth, and divide the product by 25 hundred-millionths.

8. A gallon contains 231 cubic inches. How many hogsheads of water will fill a water-tank 65-12 feet long, $5\frac{1}{4}$ feet deep, and 3 feet wide?

9. A standard bushel of the United States contains 2,150.42 cubic inches. A grain bin 6 feet long and $5\frac{1}{2}$ feet wide contains 88,39285 bushels of wheat. How deep is the bin?

10. A jeweler marked watches that cost \$900 a dozen so that he could sell at $12\frac{1}{2}$ per cent. below the marked price and yet gain $16\frac{2}{3}$ per cent. What marked price was put upon each watch?

11. A broker sold 325 barrels of flour at \$4.80 a barrel, brokerage $1\frac{2}{3}$ per cent. and invested the net proceeds in pork worth \$7.50 a barrel, brokerage 24-15 per cent. How many barrels of pork were bought?

12. The interest of \$7,200 at 5 per cent. for a given time, was \$2,085. Find the time.

13. A note of \$720 bearing 6 per cent. interest and dated January 21, 1891, due in 9 months, was sold June 6, 1891, so that the buyer would make 9 per cent. on his money. For what sum was the note sold?

14. How much will a man gain by buying 25 shares, of \$100 each, at $12\frac{1}{2}$ per cent. advance and after receiving a 6 per cent. dividend, selling them at 5 per cent. less than they cost him, brokerage $\frac{1}{4}$ per cent. in both cases, interest not considered?

15. A rectangular block is 18 inches long, 14 inches wide, and contains 15-16 cubic feet. Find the length of its diagonal.

GRAMMAR.

1. In how many ways may a noun in the objective case be used? Give examples.

2. What properties have nouns and verbs in common? What parts of speech are compared?

3. How is the passive voice formed? Give the passive participals of the verb *see*.

4. Give a synopsis of the verb *go* in the active voice, indicative mode, third person, and plural number.

5. He tried *to give* the poor *man* such help *as* was most needed. Parse the words in italics,

6. Correct where necessary:—You and him will go with me and her.

She has went home to get dinner for him and I.

7. How can you tell when *that* is a relative pronoun? When *little* is an adverb?

8. Parse the words in italics:—I *knew it to be him*. The teacher told the *pupil to study* his lesson.

9. He gave me what I wanted. Parse *me* and *what*, and change the sentence to the passive form.

10. What are the nominative forms of *whose*? The singular forms of *they*?

SPELLING.

1. The dauntless *knight*, reining in his fleet steed drew his *weapon* and listened to the sound of the *racing* and *chasing* on the lee over the brake.

2. That *ancient* evergreen is a *yew-tree*.

3. The *nuptial* ring dropped from the fleshless finger of the *skeleton*.

4. The beauty and costliness of the *hair-loom*, her mother's *legacy*, were the favorite *theme* of every tongue.

5. As the Moorish *cavalcade* ascended the eminence, the boom of *artillery* and the sound of trumpets and *cymbals* broke from the citadel on the bank of the *crystal* river.

6. He tried to think in what lay the *source* of all his *wretchedness*.

7. The *lime* is a fruit *allied* to the lemon, but smaller and more intensely sour.

8. Gathering tears and *choking* sighs answered the echo of the *awful knell*.

9. The professor had been *preceded* by a clever, *talkative*, scientific lecturer whose egotism was *intense*.

10. A sober *silence* reigned throughout the turret-crowned *mansion* amid the elms.

11. The *guilty* soul sees with fear the painful course that forms the pathway to the *skies*.

12. His *colleagues* were not less *shrewd* than he.

13. Beyond the *picturesque* ruin were seen patches of *luxuriant* meadow, with here and there groups of *graceful* oaks and *sycamores*.

14. Being *fatigued* I ate my biscuit and then went to the *wharf* for a *draught* of water.

GEOGRAPHY.

1. When it is said that Washington is on the *left* bank of the Potomac River, what is meant? Locate Pittsburgh.

2. Over what waters would a boat have to pass in going from Chicago to Buffalo?

3. Why is standard or railroad time faster than Kansas City time?

4. How many persons represent Colorado in the Congress of the United States? Why?

5. What capital cities are found on or near the fortieth parallel of north latitude? On or near what parallel has the center of population in the United States kept?

6. What is the ruler of each of the following-named countries called: Russia, Austria, Turkey, Persia, and Egypt?

7. Where is Behring Sea? What grand divisions are connected by the Isthmus of Panama?

8. Between what parallels of latitude does the United States lie? How much further east is Maine than Colorado?

9. Over what waters would a vessel pass in going from London to Calcutta?

10. For what is each place noted: Dresden, Genoa, Strasbourg, Geneva, and Sheffield?

11. In what zone is the larger part of South America? What determines the width of the Torrid zone?

12. Switzerland—its location, its form of government, its lakes, its cities, and its inhabitants.

REGULAR AND SPECIAL COURSES.

Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study, and in case it is allowed, the student must show that he is well-qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, nor will he be allowed to drop a study, unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee

on Examinations, by mail or otherwise, at least two days before the opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular courses.

LEAVING COLLEGE.

A student will not be allowed to leave College in term time without leave of absence granted by the President or the Faculty, otherwise the student will be liable to *Suspension* or *Expulsion*. Temporary leave of absence can be granted by the President, or the officer in charge during his absence. Final separation from the College must be acted upon by the Faculty.

LABOR.

Labor, two hours each school day, is required of all students not excused for physical disability. This Labor (see Course of Study) is performed on the farm, or in the garden, in shops and laboratories, in field work, in irrigation, and in surveying and engineering.

DISCIPLINE.

The discipline of the College is administered by the Faculty according to a system of demerits.

Misconduct, in or out of classes, unexcused absences from any required College exercises, meddling with College property, etc., receive one or more demerits, as the case may seem to require. Parents of students who receive ten demerits will be notified of the students' misconduct by the President; twelve demerits suspend, while fifteen expel the student from the College.

Study hours begin at 7 P. M. and continue until 10 P. M. At 10:15 P. M. lights are extinguished.

GRADES IN WORK AND STUDY.

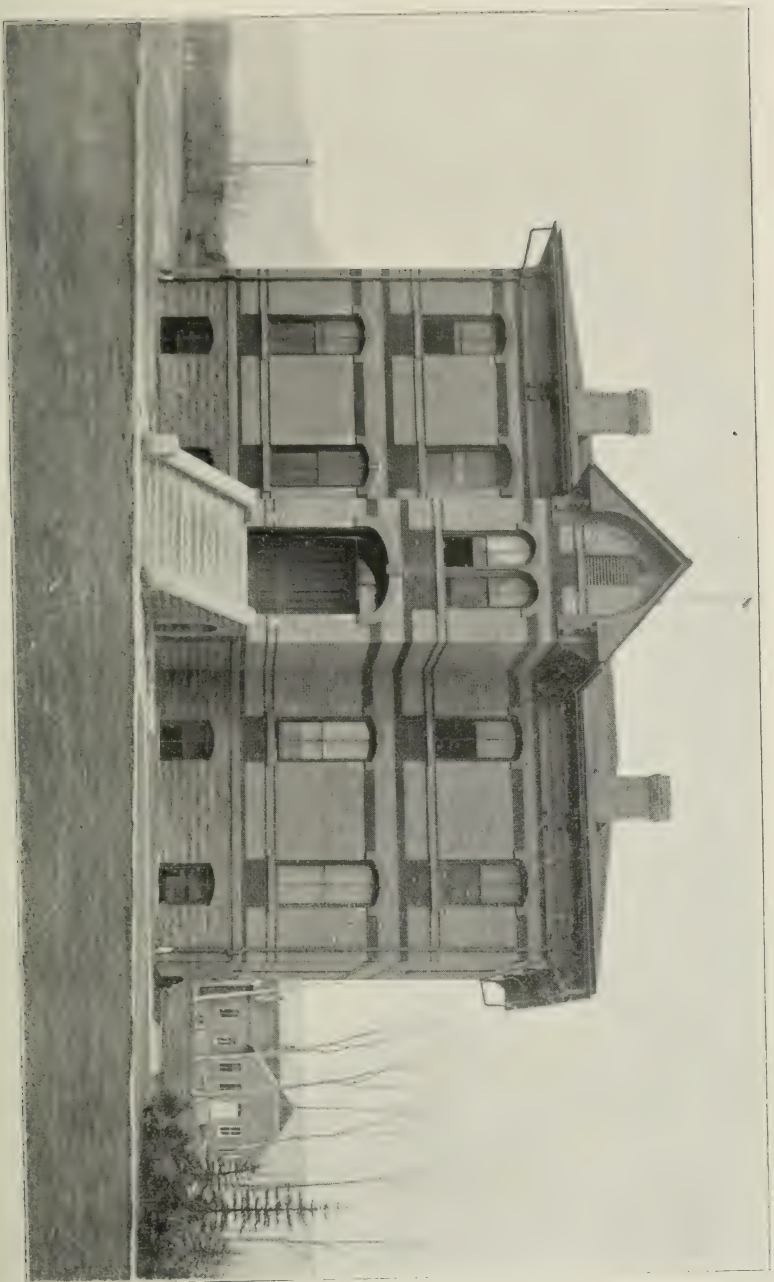
Each student is expected to maintain a grade of 65, on a scale with 100 as perfect. A student is graded as passed in any study or branch of manual practice when the average of his daily progress and his term examination equals 65, on a scale of 100 as perfect.

Failure may be made up, and tested by special examination, or the study must be again taken up with a subsequent class.

MEANS FOR INSTRUCTION AND ILLUSTRATION.

The College hall, with its new addition, contains large recitation rooms for the following-named departments: Mathematics, Mechanics and Drawing, English and Stenography, Physics and Irrigation Engineering, History, Literature, and Language; also, commodious Library and Reading rooms, Museum, Zoological Laboratory and recitation room, with work room; also, offices for officers of the College, rooms for Board of Agriculture, Faculty, etc. Finally, there is a large and well-arranged Assembly room, with opera chairs for seating 300 persons, stage, retiring rooms, cloak rooms, etc., attached, for the convenience and comfort of the school and the public. The whole is heated by steam and admirably lighted by electric lights from the works of the Fort Collins Electric Light Company. The basement is heated and lighted, and contains an Armory, 40x72 feet, for purposes of drill and gymnasium, the heating plant, bath rooms, rooms for janitor, storage, etc.

The Chemical Laboratory has a lecture-room for forty students; a work or analytic room, with desks for twenty-four students, each desk being



COLLEGE DORMITORY.

supplied with water and gas for the use of each student, and convenient hoods for ventilation; and a Station Laboratory, with balance room, distillation room, etc.

The Botanical and Horticultural Laboratory, completed in May, 1890, has fine rooms for instruction and laboratory work, office, tool room, seed room, grafting room, and ample basement room for storage. The conservatory attached, 20x50 feet, contains about 200 species, or 1,000 plants representing many interesting and rare botanical families; and is heated by improved hot-water apparatus.

The orchards and grounds are carefully laid out, and planted to ornamental shrubs and trees. Here we see the plantation of forest trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot beds, and cold frames.

The new Agricultural Hall is now completed, and is ready for occupancy. It is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for class-room work. The first floor is divided into a hallway and four large, comfortable rooms. Here will be the office of the Professor of Agriculture, and Director of the Experiment Station, laboratory, agricultural museum, and seed room. The basement has four apartments which will be used for heating apparatus, temporary dairy department, and storage.

The farm of 240 acres, nearly all under cultivation, includes the experimental ground of about 20 acres, containing three plots, A. B. and C., the first consisting of fifty smaller plots, the second of

thirty-three, ranging in size from 1-40 to 1-5 of an acre, and the third of sixteen, containing 1-4 acre each. All are permanently laid with drives and walks, and have iron stakes lettered and numbered to designate the corners. These permanent corner stakes are four feet long, of which three and one-half feet are driven into the earth. In addition, there are several plats of one acre each, for larger experiments on the farm.

The live stock consists of Clydesdale and Percheron grade draft horses, Short-Horn Durham cattle, Shropshire Down and Merino sheep. A selection of registered hogs, representing the Chester White, Poland China, and Berkshire breeds has been made. Other representative breeds of stock will be added as rapidly as means and accommodations will admit.

The Mechanic Arts Hall includes a large main building two stories in height, and an ell portion one story high.

The machine shop occupies the first floor in the north end of the building; it is supplied with a fine assortment of apparatus for working the metals. Around the room are benches, with iron vises fitted for the work in filing and chipping; and connected to the main line-shaft are the following high-grade machines: A Gray 6-foot planer, a Brown & Sharp Universal milling machine, with gear cutting attachments, a Gould & Eberhardt 15-inch shaper, a 14-inch and a 17-inch engine lathe, and a speed lathe, a Bickford 20-inch drill, a grindstone, and an emery wheel. In addition, there is supplied a good assortment of gauges, reamers, taps, dies, and other small tools.

At the east end of the machine room is the office of the Professor in charge and the tool room. In the tool room are kept such tools as are not in general use, but which are necessary for special work, or such tools as would become injured or lost if scattered around. By an order from the Professor, any tool in the tool room can be obtained and used by the students. In the west end of the machine room a space is set off, by an iron railing, for the experimental work in the testing of materials, valve setting, testing by brakes, etc. This testing laboratoy is supplied with a 50,000-pound Riehle testing machine, a 12-horse power Hendey & Meyer engine fitted with a Prony Brake, a Blake steam pump, gauges, thermometers, indicators, etc.

Opening off the machine room is the engine room, which is separated from the hall by glass partitions. In this room is the 50-horse power Harris-Corliss engine for running the shops. This engine is supplied with indicator attachment, and the student will be given a chance to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators with extra springs. A dead-weight gauge tester affords a means of correcting steam gauges.

Opposite the engine-room is the wash-room, with lockers for one hundred students.

Adjoining the wash-room is the boiler-room, containing the large boiler used to furnish the engines with steam and heat the building.

The Department of Engineering and Physics has the class-room fitted with water, electric light from its own dynamo, and curtains for darkening

the room for the use of the solar-lantern and stereopticon.

In Physics it has a collection of apparatus both for illustration and experimentation, which is at the use of the student when he is prepared for it. This collection includes a set of U. S. Standard Weights and Measures, furnished by the Government; micrometers; balances; air pumps; induction coil; standard ohm; standard cell; galvanometers; electrometers; voltmeters; ammeters; dynamo; resistance coils, etc., with work rooms, dark room, and rooms for laboratory practice.

For use in engineering it has several current meters of various patterns, including one electrical registering meter; a Darcy-Pitot tube; a number of Nilometers of various patterns which are used for experimentation; an apparatus for the measurement of the flow of water through orifices and over weirs; pressure gauges; photographs and plans; and a collection of slides for the lantern made from negatives taken by the Professor of Engineering.

It has five transits, two with solar attachment; as many levels; two compasses; plane table; rods, chains, and tapes of various patterns; odometer, planimeter, photographic apparatus, etc.

It possesses a cement tester and has a complete set of meteorological instruments, many of them self-registering, giving means for the study of meteorology.

The Military department has seventy cadet rifles and two 3-inch rifled field-pieces from the War Department. Each year there is issued a supply of amunition for both branches of service,

in order to give training in infantry skirmish drill, target practice, and artillery firing.

The Scientific department is supplied with a fine cabinet of specimens, illustrating Botany, Entomology, Geology and Mineralogy, Zoology, and Comparative Anatomy.

LOCATION.

The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural counties in the State. The town contains 2,500 inhabitants, and is beautifully situated about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its streets and buildings are finely lighted by an excellent electric light plant; and its sidewalks are exclusively made of excellent flagstone, which is found in large quarries almost at its doors.

The College is at the south side of town; on either side of the Colorado Central Railroad are its buildings and the farm. Visitors are always welcome, and they find the town accessible by six trains, which arrive and depart daily for Denver and other points. With the advantages of pure water, a beautiful location, electric lights and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

HISTORY.

The State Agricultural College of Colorado—in common with those of other States—had its origin in an act of Congress, passed July 2, 1862,

which granted 90,000 acres of land as an endowment fund for a college, "where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the *liberal* and *practical* education of the industrial classes in the *several pursuits* and *professions* of life."

No benefit was received from this grant until an act of Congress, passed April 24, 1884, confirmed it to the State. The land is now located, a part is sold, and the proceeds will form a perpetual endowment fund.

The State has supported the College by the passage of an act (1883), levying a tax of one-fifth of a mill annually on each dollar of valuation. In 1891 this tax was changed to one-sixth of a mill.

The College was incorporated by the act of 1870, and the act was amended in 1872, and again in 1874, but no steps were taken toward the erection of a College building by the Board in charge. In 1877, by the death of the President of the Board, and removal of other members from the State, an emergency was declared to exist and a new law was passed, which was given immediate effect. To the State Board of Agriculture, as thus reorganized, was intrusted the work of building a College.

The town of Fort Collins was selected as its site, and at a meeting held February 27, 1878, it was determined to erect a building suited to College purposes. The corner stone was laid July 29, 1878, and in the same year the first building was completed. The College was not opened for the

reception of students until September 1, 1879. The Dormitory was erected in 1881, and the Chemical Laboratory in 1882, but it was not thoroughly fitted for work until May, 1883. It was enlarged for Station work in 1888.

A small propagating house was built in 1882, for the purpose of aiding Horticulture. The present Greenhouse, with all modern appliances, was completed September 1, 1883. On the same day the Mechanic Shop was completed, its machinery put in order for work. A handsome addition to this building is now under way.

On June 1, 1890, were completed the large addition to the main building, and the new Botanical and Horticultural Laboratory, thus giving largely increased facilities for work.

Within the school-year just closed, many valuable permanent improvements have been made on the College farm. These include the Agricultural Hall, the farm-house, the tool-house, the sheep-fold, long lines of fencing, facilities for increased water supply, and the like.

The College now comprises the following distinct departments: Agriculture; Botany and Horticulture; Chemistry and Geology; History, Literature, and Modern Language; Mathematics; Mechanics and Drawing; Military Science; Physics and Engineering; Zoology and Entomology; English and Stenography; and the Experiment Station.

CALENDAR.

1892-1893.

SEPTEMBER.

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NOVEMBER.

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DECEMBER.

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JANUARY.

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FEBRUARY.

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MARCH.

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MAY.

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JUNE.

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JULY.

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AUGUST.

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CALENDAR OF EXERCISES.

1892-1893.

Entrance Examinations, Monday, September 5, 1892
 Fall Term begins. Tuesday, September 6, 1892
 Fall Term closes. Friday, December 2, 1892
 Winter Term begins. . . . Monday, December 5, 1892
 Holiday Recess begins. . Friday, December 23, 1892
 Holiday Recess closes. . . Monday, January 2, 1893
 Winter Term closes. Friday, March 10, 1893
 Spring Term begins. Tuesday, March 21, 1893
 Baccalaureate Address. Sunday, June 4, 1893
 State Board of Agriculture meets.
 Wednesday, June 7, 1893
 Commencement Exercises, Thursday, June 8, 1893

TABLE OF CONTENTS.

	PAGE.
State Board of Agriculture.....	2
Officers and Committees.....	3
Faculty of Instruction.....	4
Officers of the Experiment Station.....	5
Register of Students.....	6
Summary.....	10
Graduates.....	11
Alumni Association.....	13
Courses of Study and Labor.....	14
Recitation and Labor Time-tables.....	25
Departments of Instruction and Labor.....	28
Agriculture.....	28
Physiology.....	30
Zoology.....	31
Entomology.....	31
Botany and Horticulture.....	32
Chemistry and Geology.....	35
History Literature, and Language.....	39
English and Stenography.....	40
Mathematics.....	41
Mechanics and Drawing.....	43
Military Science.....	47
Physics and Irrigation Engineering.....	48
Psychology, Logic, and Political Economy.....	52
Miscellaneous.....	54
The Experiment Station.....	54
Expenses.....	55
Conditions of Admission.....	57
Examinations for Entrance.....	57
Courses, Regular and Special.....	62
Leaving College, Labor, and Discipline.....	63
Means for Illustration.....	64
Location.....	69
History.....	69
Calendar.....	72
Calendar of Exercises.....	73
Table of Contents.....	74

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OF THE

OFFICERS AND STUDENTS

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The State Agricultural College

FORT COLLINS, COLORADO.

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AND

GENERAL INFORMATION.



1892-1893.

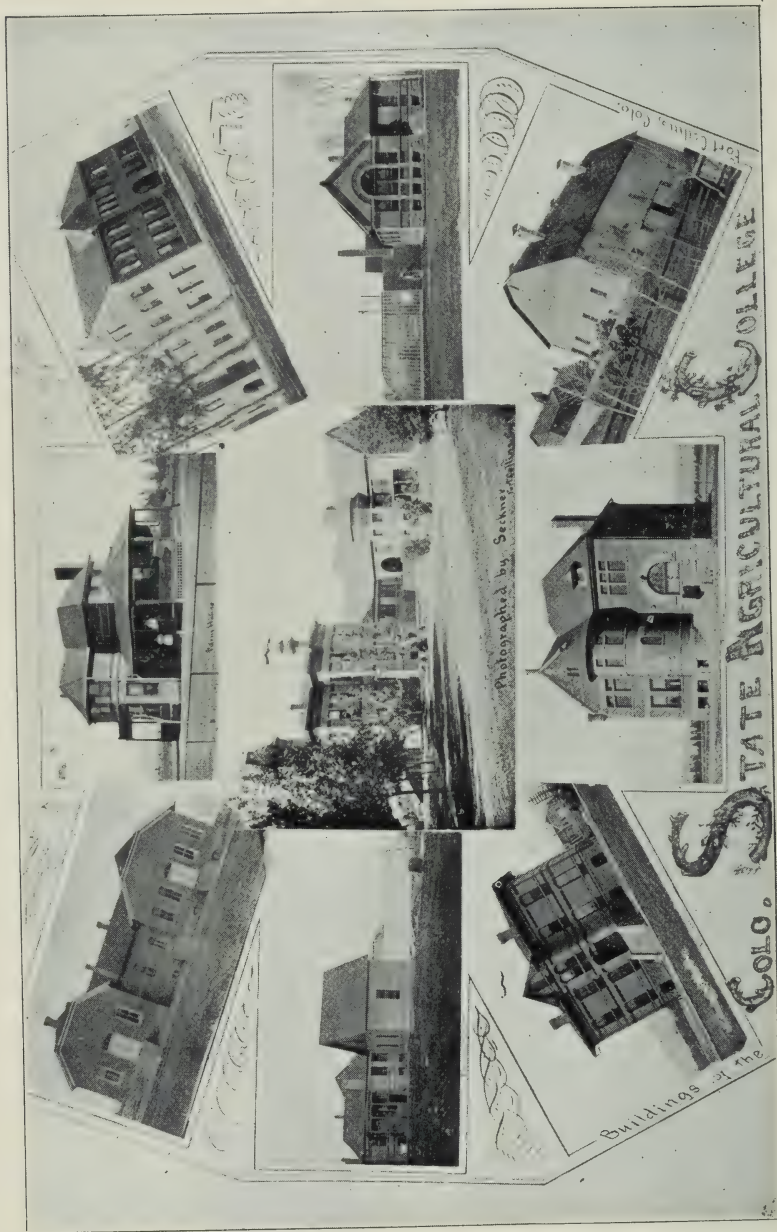
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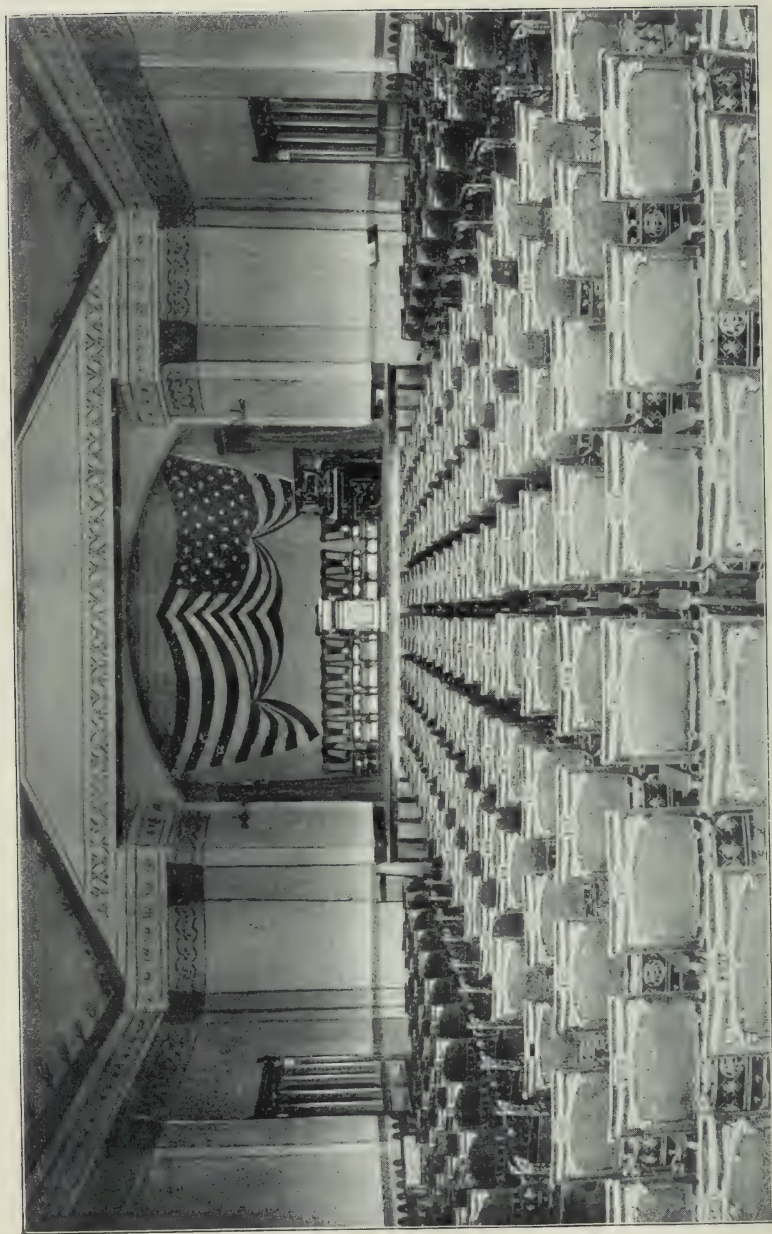
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CHARLES J. RYAN, *Chemistry.*



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L. G. CARPENTER, M. S., - METEOROLOGIST AND IRRIGATION ENG.

C. P. GILLETTE, M. S., - - - ENTOMOLOGIST

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ASSISTANTS.

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EDWARD McCABE, - - - HORTICULTURE

R. E. TRIMBLE, B. S., - - - METEOROLOGY

CHARLES F. BAKER, B. S., - - - ENTOMOLOGY

CHARLES J. RYAN, - - - CHEMISTRY

SUB-STATIONS.

F. A. HUNTLEY, B. S. A., - - - SUPERINTENDENT

Arkansas Valley Station, Rocky Ford, Colorado.

G. F. BRENINGER, - - - SEPERINTENDENT

Divide Station, Table Rock, Colorado.

FRANK BEACH, B. S., - - - SUPERINTENDENT

San Luis Valley Station, Monte Vista, Colorado.

Register of Students.

1892-1893.

SENIOR CLASS.

John Bloomfield,-----	Meeker,	Colorado
Samuel Latimer Boothroyd,---	Arkins,	"
Charles James Gilkison,-----	La Porte,	"
Ida Maud Lewis,-----	Timnath,	"
William John Ralph,-----	Fort Collins,	"
Raymond F. Walter, -----	" "	"
William Watson Willard, ----	Aspen,	"

JUNIOR CLASS.

Herbert Andrew Black, -----	Fort Collins,	Colorado
Philo Kneeland Blinn,-----	Berthoud,	"
Lulu Annette Brooks,-----	Portland,	Michigan
Jacob Hover Cowen,-----	Hotchkiss,	Colorado
Will Harman Fairfield,-----	Berthoud,	"
William B. Garrett,-----	Fort Collins,	"
Minnie Frances Harrington, --	" "	"
Herbert Salter Kendall,-----	" "	"
Celia May Southworth, -----	Denver,	"
John Philip Walsh, -----	Delta,	"
Harry Falis Williams, -----	Greenland,	"
Paul McIntosh Wright, -----	Fort Collins,	"

SOPHOMORE CLASS.

Fred Alford, -----	Fort Collins,	Colorado
Edith Gertrude Boothroyd, ---	Arkins,	"
Florence Jessie Boothroyd, ----	"	"
Kate Dorthie Brandis, -----	Fort Collins,	"
Henry Alvin Calkins, -----	Harris,	"
Frederick William Culver, ----	Longmont,	"
Loren Bradley Curtis, -----	Littleton,	"
Joseph Swallow Davis, -----	Denver,	"
George Edgar Garrett, -----	Fort Collins,	"
Mabel Giddings, -----	" "	"
William Franklin Gilkison, ---	La Porte,	"
Ella Goldsborough, -----	Fort Collins,	"
Selden Foster Herrick, -----	Denver,	"
Elizabeth Ellen Ish, -----	Fort Collins,	"
Ella Sophia Lambert, -----	" "	"
Seth Curtis Lewis, -----	Timnath,	"
Richard Appleton Maxfield, --	Rifle,	"
Abner Sherman McKee, -----	Montrose,	"
Edgar Avery Mead, -----	Greeley,	"
Guy Miller, -----	Longmont,	"
Duane Frank Miner, -----	Fort Collins,	"
George William Nelson, -----	Denver,	"
Grafton St. Clair Norman, ----	Hamilton,	Ohio
Christian Peter Pels, -----	Raton,	New Mexico
Fannie Christina Schelt, ----	Fort Collins,	Colorado
Walter Kolb Starbird, -----	Longmont,	"
Edith Walter, -----	Fort Collins,	"
Nathan C. Warren, -----	" "	"
Ray C. Watson, -----	Greeley,	"
Hoyt Douglas Whipple, -----	Berthoud,	"

FRESHMAN CLASS.

Henry Franklin Alps, -----	Loveland,	Colorado
Emil Affolter, -----	Longmont,	"

Frank Affolter,-----	Longmont,	Colorado
Thomas George Balman,-----	Hillside,	"
James Allison Blair,-----	Loveland,	"
George Bloomfield,-----	Meeker,	"
Edith Emily Boyce,-----	Little Cressingham,	England
Albert Alford Boyd,-----	Loveland,	Colorado
Walter Martin Brandis,-----	Fort Collins,	"
Calla Davis Bullard,-----	Loveland,	"
Alfred Hiram Bungardt,-----	Kansas City,	Missouri
Stephen Theodore Burkhard,--	Trinidad,	Colorado
Arthur White Bush,-----	Boulder,	"
Richard Turner Calkins,-----	Harris,	"
George Alfred Carlson,-----	Platteville,	"
Charles Edward Clark,-----	Elbert,	"
Roy Decker,-----	Fort Collins,	"
Walter George Decker,-----	" "	"
Sarah Gertrude Dix,-----	Loveland,	"
Nettie Evans,-----	Fort Collins,	"
Arthur St. John Ferguson,----	Greeley,	"
Ralph Otto Ficht,-----	Denver,	"
Mark Hudson Flinn,-----	Loveland,	"
Alexander Wilson Fullerton,--	Denver,	"
Henry Bryant Fullerton,-----	"	"
Bertram Alden Gage,-----	Fort Collins,	"
Charles Milton Garrett,-----	" "	"
Carl Newton Gleason,-----	Kiowa,	"
Allen Greenacre,-----	Fort Collins,	"
Mabel Josephine Hahn,-----	Loveland,	"
David Cyrus Harned,-----	Livermore,	"
Archie Jesse Harris,-----	Fort Collins,	"
Robinson William Hawley,---	" "	"
Ralph Henry Hess,-----	Loveland,	"
William Ashton Hilton,-----	"	"
Guy Surinus Hooper,-----	Greeley,	"
Leslie Fowler Hoover,-----	Denver,	"

Herman Howard,-----	Greeley,	Colorado
John Blackmore Lausing,---	Pueblo,	"
James Mifflin Loud, -----	Fort Robinson,	Nebraska
Emmet Cleburne McAnelly, --	Fort Collins,	Colorado
Robert Ray McCain,-----	" "	"
Homer Francis McGinley,---	Timnath,	"
Ralph Emery Metcalf,-----	Fort Collins,	"
Jessie Salenia Moore,-----	" "	"
Olof Wallfred Nyberg,-----	Pueblo,	"
Perry Hjalmer Nyberg, -----	"	"
Ida Patterson,-----	Fort Collins,	"
Webb Allen Patton,-----	" "	"
Jennie Peterson,-----	Timnath,	"
Smith Durie Philip,-----	Fort Lupton,	"
Frank Piatt, -----	Fort Collins,	"
Mamie Elizabeth Prendergast,	" "	"
Henry Read,-----	Denver,	"
Helene Jeanette Rhodes,-----	Ogden,	Utah
Albert Jason Rosenow,-----	Fort Collins,	Colorado
Carrie Ellen Sadler,-----	Beebe,	Arkansas
Robert Winfred Sears,-----	Greenhorn,	Colorado
Alice Etheleen Silcott,-----	Manhattan,	"
George Augustus Smith,-----	Fort Collins,	"
Ross Courtney Stephenson,---	" "	"
Sprague Lucius Stewart,-----	Denver,	"
Neil Carmichael Sullivan,---	Longmont,	"
Hiram Hubert Tannar,-----	Raymer,	"
Everett Washburn Taylor,---	Winona,	"
William Selman Watson,-----	Denver,	"
Robert Samuels Weldon,-----	Arkins,	"
Fred Montgomery Westlake,--	Florence,	"
Frank Newell Wilcox,-----	Ragan,	Nebraska
Harry Charles Williams,-----	Aspen,	Colorado
Percy Warren Williams,-----	Denver,	"

PREPARATORY CLASS.

Grace Amelia Bates,-----	Fort Collins,	Colorado
Fredrick Schiller Bell,-----	Highlands,	"
Sperry Bungardt,-----	Kansas City,	Missouri
Ezekiel Myron Bushnell,-----	Loveland,	Colorado
George William Butler,-----	Longmont,	"
John Charles Butler,-----	Lyons,	"
Orlie Lee Buttorff,-----	Platteville,	"
Henry Leo Byrnes,-----	Aspen,	"
William John Byrnes,-----	"	"
Walter C. Cory,-----	Fort Collins,	"
Allen Frederick Davis,-----	Westcliffe,	"
Myrna May Dix,-----	Loveland,	"
Fred William Dunning,-----	Pueblo,	"
Max Finch,-----	Platteville,	"
Martha Rose Gilkison,-----	La Porte,	"
Charles Mantz Hottel,-----	Fort Collins,	"
Robert Ryan Johnston,-----	Pueblo,	"
Ralph Lapham,-----	Lyons,	"
Clarence Lines,-----	Platteville,	"
Herbert Martin,-----	Alamosa,	"
Benjamin Waldo McCloskey,--	Colorado Springs,	"
Clark Otto McGavic,-----	Denver,	"
Walter D. Moore,-----	"	"
Willie Crawford Nisbet,-----	Pueblo,	"
George Henry Rist,-----	Loveland,	"
Augustus Oury Robbins,-----	Denver,	"
Henry Clark Smith,-----	Woodstock,	Ohio
Matt Leighton Stanley,-----	Abbey,	Colorado
Charles Eugene Towner,-----	Fort Collins,	"
William Lewis Wade,-----	Paonia,	"
Marshall Ragland Westcott,--	Aspen,	"
Fred Kirby Wollaston,-----	Denver,	"
William Robert Wright,-----	Fort Collins,	"
Josie Yattau,-----	Loveland,	"

SPECIAL STUDENTS.

Fannie Louisa Barnes, -----	Fort Collins,	Colorado
Maria Emma Beeson, -----	Loveland,	"
Eva H. Cushing, -----	Fort Collins,	"
Eugene Evans, -----	Denver,	"
Agnes Hawley, -----	Fort Collins,	"
Minerva Huberty, -----	" "	"
George Morrison McKimmie, --	Denver,	"
Clara Ella Mitchell, -----	Fort Collins,	"
Laura Belle Mitchell, -----	" "	"
James M. Moore, -----	" "	"
Lena Moore, -----	" "	"
Charles V. Parker, -----	" "	"
Charles A. Parlin, -----	Norwich,	Connecticut
Lillian Leon Phillips, -----	Fort Collins,	Colorado
Mabelle E. Picken, -----	" "	"
Henry H. Porter, -----	Indianapolis,	Indiana
Ralph Elliott Rugh, -----	Fort Collins,	Colorado
Jessie Grace Smith, -----	Loveland,	"
Mayme Olive Smith, -----	"	"
Jennie Swickard, -----	Denver,	"
Harlan Thomas, -----	"	"
William Edward Wallace, ----	"	"
Frank Lee Watrous, -----	Fort Collins,	Colorado
Anna Millicent Wills, -----	" "	"
Alice Lena Wills, -----	" "	"

SUMMARY.

Seniors -----	7
Juniors -----	12
Sophomores -----	30
Freshmen -----	71
Preparatory Students -----	34
Special Students -----	25
Total -----	179

GRADUATES.

1884.

George H. Glover, B. S., D. V. M., Veterinary Surgeon.....Denver, Colorado
 Elizabeth Lawrence, B. S., *nee* Coy, at Home..Fort Collins, Colorado
 Leonidas Loomis, B. S., Stockman.....“ “ “

1885.

Cora B. Blinn, B. S., at Home.....Berthoud, Colorado
 Edna L. Hice, B. S., at Home.....Fort Collins, “
 Lelia Robertson, B. S., *nee* Loomis, at Home.. “ “ “
 Grace Espy Patton, B. S., Professor of English and Stenography, State Agricultural College.....Fort Collins, Colorado
 Robert E. Trimble, B. S., Assistant to Meteorologist, State Experiment Station.....Fort Collins, Colorado
 Helen Rigden, B. S., *nee* White, at Home.....“ “ “

1886.

Wilbert J. Sickman, B. S., Clerk of County Court.....Fort Collins, Colorado

1887.

Eleanor F. Gill, B. S., at Home.....Fort Collins, Colorado
 Daisy E. Stratton, B. S., Stenographer.....Tallapoosa, Georgia
 Lerah McHugh, B. S., *nee* Stratton, at Home..Fort Collins, Colorado
 Edwin G. Nettleton, B. S., Engineer.....Cocorrit, Sonora, Mexico

1888.

Lewis A. Coffin, B. S., Farmer.....Boise City, Idaho
 Harvey H. Griffin, B. S., Assistant Agriculturist, Agricultural College.....Las Cruces, New Mexico
 Josephine Lee, B. S., Teacher, City Schools.....Boulder, Colorado
 Genevieve E. McLain, B. S., Teacher, State Normal School.....Peru, Nebraska

1889.

Lucy Bell, B. S., Teacher, City Schools.....Fort Collins, Colorado
Arthur L. Davis, B. S., Medical Student.....Denver, Colorado

1890.

Clarence V. Benson, B. S., Attorney-at-Law.....Loveland, Colorado
Velma V. Beebe, B. S., *nee* Benson, at Home " "
Burt C. Buffum, B. S., Professor Botany and Horticulture,
State University.....Laramie, Wyoming
Charles A. Duncan, B. S., Farmer.....Timnath, Colorado
Newton C. Garbutt, B. S., Stenographer and Law
Student.....Fort Collins, Colorado
Helen E. Lunn, B. S., Book-keeper....." " "
Harry R. Temple, B. S., Steam Engineer.....Boulder, Colorado
Cora B. Thoman, B. S., at Home.....Fort Collins, Colorado
Mary L. Weaver, B. S., B. Ph., at Home " " "

1891.

Charles R. Evans, B. S., Merchant.....Fort Collins, Colorado
Minnie E. McLain, B. S., Teacher....." " "
John S. Calkins, B. S., Farmer.....Harris, Colorado

1892.

Charles W. Beach, B. S., Assistant Engineer, D. & R. G.
Railroad.....Crested Butte, Colorado
Frank Beach, B. S., Superintendent San Luis Valley Ex-
periment Station.....Monte Vista, Colorado
Alice Bell, B. S., Stenographer Fort Collins, Colorado
Samuel Bell, B. S., Medical Student Denver, "
Don A. Carpenter, B. S., Superintendent Iron
Works.....Fort Collins, "
Porter J. Preston, B. S., Engineer.....Longmont, Colorado
Albert J. Sedgwick, B. S., City Editor the *Ex-*
press.....Fort Collins, Colorado
Lewis L. Stimson, B. S., Surveyor.....Greeley, Colorado
Frank H. Thompson, B. S., Engineer North Platte, Nebraska

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COURSES OF STUDY.

Preparatory Year.

FIRST TERM.

Arithmetic	Wentworth
United States History	Johnston
English Analysis and Composition	Reed and Kellogg
Drawing	Free-hand

Labor : { Farm. ten weeks.
 { Shop, three weeks.

SECOND TERM.

Arithmetic	Wentworth
United States History	Johnston
English Analysis and Composition	Reed and Kellogg
Drawing	Free-hand

Labor : Shop.

THIRD TERM.

Arithmetic	Wentworth
Civil Government	Townsend's Shorter Course
Word Analysis and Composition	Swinton
Drawing	Free-hand

Labor : { Shop, two weeks.
 { Garden, nine weeks.

Military Drill daily. Ladies take Calisthenics two hours per week. Rhetorical work one hour per week. Readings from American Men of Letters one hour per week.

Freshman Year.

FIRST TERM.

Algebra	Wentworth
Composition and Rhetoric	Lockwood
Botany	Gray's Lessons
History	Sheldon
Labor : {	Garden, ten weeks ; shop, three weeks, A., I.
	Shop, M.
	Wood Carving, L.

SECOND TERM.

Plane Geometry	Wentworth
History	Sheldon
Drawing	Instrumental
Agriculture, A., I., L.	Lectures
Carpentry and Joinery, M.	Goss
Labor :	Shop, A., I., M.

THIRD TERM.

History	Sheldon
Drawing	Instrumental
Botany	Gray, with Coulter's Flora
Plane Geometry, 1-4 ; Algebra, 3-4	Wentworth
Labor : {	Shop, two weeks ; farm, nine weeks, A., I.
	Shop, M.
	Molding, L.

Military Drill daily. Rhetorical work one hour per week. Readings from American Men of Letters and American Orators one hour per week. Calisthenics two hours per week.

Sophomore Year.

FIRST TERM.

Physiology	Martin
Book-keeping, Double Entry	Gay
Rhetoric.....	A. S. Hill
Algebra, 1-4 ; Trigonometry, 3-4.....	Wentworth
Labor : { Shop, 1-2 ; Physiology, 1-2, A., I., M.	
{ Home Hygiene, 1-2, L.	
{ Physiology, 1-2, L.	

SECOND TERM.

Literature	Kellogg—Library
Physics	Deschanel
Physiology	Martin
Drawing, A., L.....	Instrumental and Free-hand
Solid Geometry, I., M.	Wentworth
Descriptive Geometry, I., M.....	Wentworth
Farm Buildings and Roads, A.....	Lectures
Labor : Physics.	

THIRD TERM.

Literature	Kellogg—Library
Physics	Deschanel
Surveying, A., I., M.....	Hodgman
Drawing, L.....	Free-hand
Ethics, A., L.....	Lectures
Algebra, I., M.....	Wentworth
Descriptive Geometry, I., M.....	Wentworth
Agriculture, A.....	Lectures
Labor : Physics, 1-2 ; Surveying, 1-2, A., I., M.	
Readings in Literature ten hours per week, 1-2, L.	

Military Drill daily. Rhetorical work one hour per week. Readings from English Men of Letters one hour per week. Calisthenics two hours per week for ladies.

The Course from this point is separated into :

1. The Agricultural Course.
2. The Mechanical Course.
3. The Irrigation Course.
4. The Ladies' Course.
5. The Chemical Course.

All lead to the degree of Bachelor of Science.

Agricultural Course.

JUNIOR YEAR.

FIRST TERM.

Horticulture	Lectures
Chemistry	Norton
Physics	Deschanel
Landscape Gardening, 1-2	Lectures
Meteorology, 1-2	Lectures
Labor: Horticulture, 2-5; Chemistry, 3-5.	

SECOND TERM.

Chemistry	Norton
Geology	LeConte
Zoology	Colton's Manual and Lectures
Zoological Laboratory.	
Labor: Chemistry.	

THIRD TERM.

Agricultural Chemistry	Storer
Entomology	Lectures
Geology	LeConte
Irrigation Hydraulics	Lectures
Labor: Chemistry, 3-5; Entomology, 2-5.	

SENIOR YEAR.

FIRST TERM.

Agricultural Chemistry	Storer
Agriculture	Lectures
Psychology	Hill
Logic	Gregory
Labor: Chemistry.	

SECOND TERM.

Physiological Botany	Strasburger
Horticulture	Lectures
Agriculture	Lectures
Constitution	Andrews
Labor: Physiological Botany.	

THIRD TERM.

Agriculture	Lectures
Political Economy	Mill
Recent History	Library

Thesis Work.

Labor: Farm, 1-2; Garden, 1-2.

Military Drill daily. Rhetorical work one hour per week throughout the course.

Mechanical Course.

JUNIOR YEAR.

FIRST TERM.

Foundry Practice.....	West
Chemistry.....	Norton
Physies.....	Deschanel
Higher Algebra.....	Wentworth
Labor : Shop, 2-5 ; Chemistry, 3-5.	

SECOND TERM.

Chemistry.....	Norton
Geology.....	LeConte
Analytic Geometry.....	Wentworth
Drawing.....	Instrumental
Labor : Chemistry.	

THIRD TERM.

Drawing.....	Instrumental
Calculus.....	Taylor
Elements of Mechanism.....	Stahl and Woods
Work-Shop Appliances.....	Shelley, Rose
Labor : Shop.	

SENIOR YEAR.

FIRST TERM.

Drawing.....	Instrumental
Calculus.....	Taylor
Logic.....	Gregory
Psychology.....	Hill
Labor : Shop.	

SECOND TERM.

Drawing.....	Instrumental
Strength of Materials.....	Merriman
Transmission of Power.....	Lectures
Steam Engine.....	Holmes
Boilers.....	Wilson
Labor : Shop, 4-5 ; Testing Materials, 1-5.	

THIRD TERM.

Special Chemistry.....	Blair—Winkler and Lunge
Special Machines.....	Lectures
Political Economy.....	Mill
Thesis Work.	
Labor : Chemistry.	

Military Drill. Rhetorical work one hour per week throughout the course.

Irrigation Course.

JUNIOR YEAR.

FIRST TERM.

Irrigation Engineering.....	Lectures—Wilson
Physics.....	Deschanel
Higher Algebra.....	Wentworth
Horticulture.....	Lectures
Labor: Horticulture, 2-5; Engineering, 3-5.	

SECOND TERM.

Reservoirs and Dams, 1-2.....	Lectures—Merriman
Hydraulic Construction, 1-2.....	Lectures
Analytic Geometry.....	Wentworth
Geology.....	LeConte
Drawing.....	Instrumental
Labor: Engineering.	

THIRD TERM.

Canal Engineering.....	Lectures—Flynn
Agricultural Hydraulics.....	Lectures
Calculus.....	Taylor
Drawing.....	Instrumental
Labor: Engineering.	

SENIOR YEAR.

FIRST TERM.

Calculus.....	Taylor
Chemistry.....	Norton
Logic.....	Gregory
Hydrography, 1-2.....	Lectures
Meteorology, 1-2.....	Lectures
Labor: Engineering, 2-5; Chemistry, 3-5.	

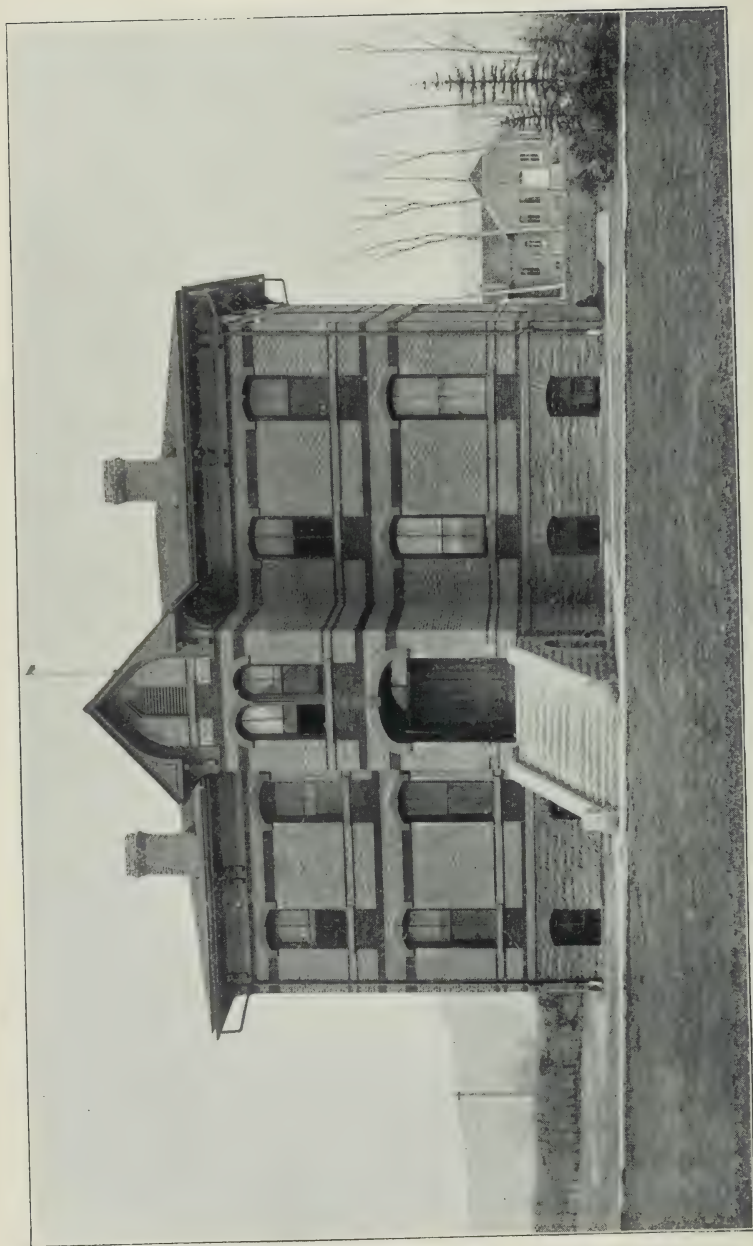
SECOND TERM.

Chemistry.....	Norton
Strength of Materials.....	Lectures—Merriman
Constitution.....	Andrews
Drawing.....	Instrumental
Labor: Chemistry, 4-5; Testing of Materials, 1-5.	

THIRD TERM.

Hydraulics.....	Lectures
Trusses and Bridges.....	Burr
Political Economy.....	Mill
Thesis Work.	
Labor: Engineering.	

Military Drill daily. Rhetorical work one hour per week throughout the course.



DORMITORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

(Now used by the Department of Physics and Irrigation Engineering.)

Ladies' Course.

JUNIOR YEAR.

FIRST TERM.

Typewriting.....	
Chemistry.....	Norton
Physies.....	Deschanel
Horticulture.....	Lectures
Labor : Typewriting, 2-5 : Chemistry, 3-5.	

SECOND TERM.

Chemistry.....	Norton
Geology.....	LeConte
Zoology.....	Colton's Manual with Lectures
Typewriting.....	
Labor : Chemistry.	

THIRD TERM.

Chemistry of Common Life.....	Johnston
Geology.....	LeConte
Recent History of America.....	Library
Stenography.....	
Labor : { Chemistry. { Geology.	

SENIOR YEAR.

FIRST TERM.

Logic.....	Gregory
Psychology.....	Mill
Landscape Gardening, 1-2.....	Lectures
Meteorology, 1-2.....	Lectures
Philosophy of History.....	Lectures
Labor : History, ten hours per week, Library.	

SECOND TERM.

Physiological Botany.....	Lectures
Psychology (Applied).....	Hill and Lectures
Constitution.....	Andrews
Stenography.....	
Labor : Physiological Botany.	

THIRD TERM.

Recent History of Europe.....	Library
Political Economy.....	Mill
Sociology.....	Lectures
Thesis Work.	
Labor : History, ten hours per week, Library.	

Rhetorical work one hour per week throughout the course.
Calisthenics two hours per week throughout course.

Chemical Course.

JUNIOR YEAR.

FIRST TERM.

Elementary Chemistry.....	Norton
Chemical Physics.....	Cooke
Toxicology.....	Wormley
Higher Algebra.....	Wentworth
Labor: Chemistry.	

SECOND TERM.

Elementary Chemistry.....	Norton
Agricultural Chemistry.....	Storer
Analytic Geometry.....	Wentworth
Blowpipe and Mineralogy.....	Endlich
Labor: Chemistry.	

THIRD TERM.

Organic Chemistry.....	Remsen
Agricultural Chemistry.....	Storer
Calculus.....	Taylor
Chemical Technology.....	Wagner
Labor: Chemistry.	

SENIOR YEAR.

FIRST TERM.

Volumetric Analysis.....	Hart
Psychology.....	Mill
Logic.....	Gregory
Calculus.....	Taylor
Labor: Chemistry.	

SECOND TERM.

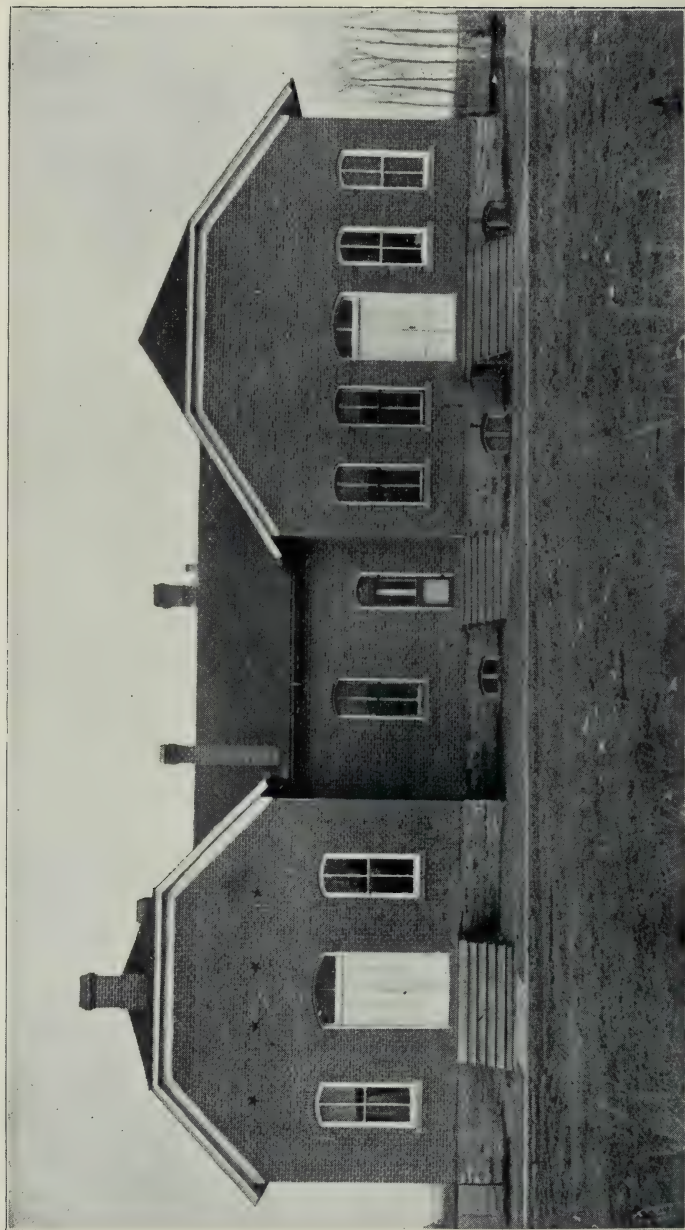
Assaying.....	Brown
Geology.....	LeConte
Zoology.....	Colton's Manual with Lectures
United States Constitution.....	Andrews
Labor: Chemistry.	

THIRD TERM.

Gas Analysis.....	Winkler and Lunge
Geology.....	LeConte
Political Economy.....	Mill
Thesis Work.	
Labor: Chemistry.	

Military Drill daily. Rhetorical work one hour per week throughout course.

Students who elect to take the Chemical Course must have first two years with those taking the Mechanical Course, or with those taking the Irrigation Course.



CHEMICAL LABORATORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

RECITATION SCHEME—FALL TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	U. S. History.	Composition and Rhetoric. Algebra.	Rhetoric.	Horticulture. Foundry Practice.	Logic.
9 a. m.	English Analysis.	History. Botany.	Algebra and Plane Trigonometry.	Chemistry. Irrigation Engineering.	Psychology. Chemistry.
9:50 a. m.	Drawing.	Botany. Composition and Rhetoric.	Physiology.	Physics.	Agricultural Chemistry. Calculus. Philosophy of History.
10:40 a. m.	Arithmetic.	Algebra. History.	Book-keeping.	Higher Algebra. Meteorology, 1-2. Landscape Gardening, 1-2. Typewriting	Drawing. Meteorology, 1-2; Agriculture. Hydrography, 1-2; Landscape Gardening, 1-2.
11:30 a. m. to 12:20 p. m.	Calisthenics and Military Drill.				
1:30 p. m. to 3:30 p. m.	Farm, 3-4. Shop, 1-4.	Garden, 3-4. Shop, 1-4. Wood Carving.	Shop, 1-2. Home Hygiene, 1-2. Physiology, 1-2.	Horticulture, 2-5; Shop, 3-5; Typewriting, 2-5; Chemistry, 3-5. Engineering.	Chemistry. Shop. Engineering, 2-5; Chemistry, 3-5. Historical Reading.

RECITATION SCHEME--WINTER TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.		General Assembly of Students for Chapel Exercises.			
8:10 a. m.	Drawing.	History.	Solid Geometry. Farm Buildings and Roads. Drawing.	Zoology. Drawing.	Physiological Botany. Drawing.
9 a. m.	English Analysis.	Agriculture. Carpentry and Joinery.	Drawing. Literature.	Zoological Laboratory. Typewriting. Analytic Geometry.	Horticulture. Strength of Materials. Stenography.
9:50 a. m.	U. S. History.	Plane Geometry.	Physiology.	Reservoirs and Dams, 1-2; Hydraulic Con- struction, 1-2. Chemistry.	Agriculture. Trans- mission of Power. Chemistry. Psychology (applied).
10:40 a. m.	Arithmetic.	Drawing.	Physics.	Geology.	Constitution. Steam Engine.
11:30 a. m. to 12:20 p. m.		Calisthenics and Military Drill.			
1:30 p. m.	Shop.	Shop.	Physics.	Chemistry. Engineering.	Physiological Botany. Shop, 4-5; Testing Materials, 1-5. Chemistry, 4-5.
3:30 p. m.	Shop.	Shop.	Descriptive Geometry.		

RECITATION SCHEME--SPRING TERM.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	Civil Government.	Botany. Drawing.	Physics.	Calculus. Entomology. (Chemistry of Common Life.	Political Economy.
9:00 a. m.	Word Analysis.	Drawing. Botany.	Agriculture. Literature. Algebra.	Geology. Canal Engineering. Workshop Appliances.	Sociology. Thesis Work. Hydraulics. Special Machines.
9:50 a. m.	Arithmetic.	History.	Surveying. Drawing.	Agricultural Chemistry. Stenography. Drawing.	Agriculture. Thesis Work. Trusses and Bridges.
10:40 a. m.	Drawing.	Geometry and Algebra.	Ethics.	Recent History. Hydraulics. Elements of Mechanism.	Recent History. Special Chemistry. Thesis Work.
11:30 a. m. to 12:20 p. m.	Calisthenics and Military Drill.				
1:30 p. m. to 3:30 p. m.	Shop, 1-6 Garden, 5-6.	Shop, 1-6. Farm, 5-6. Shop. Molding.	Physics, 1-2; Surveying, 1-2. Readings in Literature, 1-2.	Chemistry, 3-5; Entomology, 2-5. Shop. Engineering. Geology, 2-5.	Farm, 1-2; Garden, 1-2. Chemistry. Engineering. Readings in History.
3:30 p. m.	Descriptive Geometry.				

Departments of Instruction and Labor.

AGRICULTURE.

By means of intelligent experimental work, conducted on the College Farm and at the Experiment Station, in which student labor is given a prominent place, a very practical training is given.

A greater effort than ever before is being made by the authorities to provide a thorough course of instruction, in the School of Agriculture, designed especially to educate the students for agricultural pursuits and scientific investigations. In addition to the complete course, a brief but thoroughly practical

WINTER COURSE

of lectures has been instituted. This course is valuable to farmers as well, as their sons. The lectures continue four weeks and, in addition to those on Agriculture, include a lecture daily on Agricultural Chemistry, Botany, Horticulture, and Entomology. Special lectures are also solicited from experts in certain lines. For those desiring more knowledge in Agriculture and kindred subjects than is offered in the Winter lectures, a

SHORT COURSE IN AGRICULTURE

of two years is provided, with practical and instructive farm and garden labor, two hours daily, or laboratory or experimental work, and military drill during the entire

course. The instruction consists of lectures, principally, sometimes text-book lessons, supplemented by lectures on the elements, history, origin, and development of, and the general principles underlying, Agriculture; breeds of live stock, their adaptation to this country and modifications produced by climate, food, and treatment; the dairy in its many forms, together with the breeds for dairy purposes. Soils, preparation for seeding, harvesting, storing, and marketing—subjects with which, those who desire this course, are more or less well acquainted practically—will be considered but briefly.

THE REGULAR AGRICULTURAL COURSE.

The four-year course begins with the College year and in the Freshman class. Agriculture is taught, beginning with the Winter term and continuing through the year. The instruction consists of the lectures of the Short Course above named, the students of the two classes coming together to receive it.

In the Junior year, Fall term, the instruction in Agriculture begins with lectures on the history of Agriculture, fertilizing, and farm buildings. The breeds of live stock receive attention much of the year.

In the Senior year, first term, there is further instruction in regard to soils, and practical irrigation; and special instruction in the principles of stock-feeding. In the second term, the subjects of drainage, cereals, and cross-fertilization are treated.

In the third term, the subject of improved stock breeding and dairying, with practical work, is very thoroughly treated in a course of lectures and by text-book instruction.

The whole course will be supplemented by the labor on the farm, and laboratory and experimental work, at the times noted in the schedule of exercises.

SHORT COURSE IN AGRICULTURE.**FIRST YEAR.**

First term—1. Agriculture. 2. Botany. 3. Zoology. 4. Composition and Rhetoric. Labor, garden.

Second term—1. Agriculture. 2. Book-keeping. 3. Physics (elementary). 4. Drawing. Labor, shop.

Third term—1. Agriculture. 2. Botany. 3. Drawing. 4. Entomology. Labor, farm.

SECOND YEAR.

First term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Drawing. Labor, chemical laboratory.

Second term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Physiology. Labor, chemical laboratory.

Third term—1. Agriculture. 2. Agricultural Chemistry. 3. Physiology. 4. Irrigation Hydraulics. Labor, chemical laboratory. Military drill throughout the course.

PHYSIOLOGY

is taught during the first and second terms of the Sophomore year, Martin's Human Body being used as a text-book. Aside from the daily recitations, students spend two hours a day, during the last half of the first term, in the laboratory, to study human and comparative osteology and histology, and to dissect anæsthetized animals, for the purpose of making a careful study of the various organs.

The laboratory is well-equipped, possessing, among other things, a fine series of mounted skeletons, an expensive manikin (a life-sized model of the human body so dissected as to show nearly every tissue and organ that can be seen in an actual dissection), enlarged papier mache models of the eye, ear, brain, and other important parts, also compound and dissecting microscopes, microtomes, and dissecting instruments.

HOME HYGIENE.

This subject is taught by means of lectures during the first six weeks of the first term of the Sophomore year in



MUSEUM, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



CLASS IN PHYSIOLOGY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

the Ladies' Course. Instruction is given in those subjects that have to do with health in the home as, the prevention of disease, micro-organisms and disease, care of the sick, care of the home, care of children, food, clothing, exercise, etc.

ZOOLOGY

is taught in the second term of the Junior year in the Agricultural Course and the Ladies' Course. This branch of natural science is taught by means of lectures and actual demonstrations in the laboratory. Each student is furnished with typical forms of the different branches of the animal kingdom, which he studies carefully, making drawings and taking notes. In this manner, the student acquires a practical knowledge of the structure and classification of animals, that he cannot obtain by a mere study of books.

Microscopes, dissecting tools, and all necessary equipment for laboratory work are furnished free, each student being required to care for his own instruments.

ENTOMOLOGY

is taken in the third term of the Junior year in the Agricultural Course, and is taught by lectures and laboratory work. Each student gets together and classifies a collection of insects representing all the orders, and carries a few species through all their transformations, taking notes and making drawings and descriptions.

Particular attention is given to the economic features of this study. Those insects known to be injurious are given special attention, and the students are made familiar with their habits and natural histories. Students also prepare the principal insecticide substances and apply them for the destruction of insects.

In connection with this department are a good apiary and honey-house, thoroughly equipped with the most mod-

ern appliances, and students so desiring are taught and allowed to put into practice all the manipulations of the apiary.

Students taking this study are required to purchase Packard's Entomology for Beginners.

BOTANY.

The study of Botany begins with the Freshman year. The Fall term is devoted mainly to Structural Botany. The plant as an individual is studied as to its part, or organs—the relation each part bears to the whole—the variations in the parts, and the uses they serve. Roots, branches, buds, leaves, flowers, and fruits are placed in the students' hands, and the technical descriptive terms are learned by applying them directly to the plants.

Gray's Lessons is used as text to supplement the instruction from the plants themselves. A few lectures on classification and the relations of plants to each other are given toward the close of this term.

The Spring term of the same year is devoted to Systematic Botany. Dissecting microscopes and necessary tools are furnished and plants are each day supplied for analysis. Students are taught the application of the principles learned during the first term, so that they may understand the methods of determining the names of plants. The great variety of plants at hand enables the student to become familiar with all the leading natural orders. Written descriptions of the plants analyzed are required. Coulter's Manual of Rocky Mountain Botany is the text-book used.

PHYSIOLOGICAL BOTANY.

In the Winter term of the Senior year, the Agricultural students study vegetable physiology and the minute structure of plants, using as a text-book Strasburger's Practical Botany.

Compound microscopes are supplied and the Botanical laboratory is open to members of the class two hours each afternoon.

An herbarium of native and foreign plants and the green-house furnish material for study.

A portion of this term is devoted to Cryptogamic Botany, special attention being given to rusts, smuts, and mildews, injurious to plants.

The laboratory is well-equipped with books of reference and with all necessary apparatus and reagents.

HORTICULTURE.

Instruction in Horticulture is given by lectures. The first course of thirteen weeks, in the Fall term of the Junior year, deals mainly with methods. Under the general head of Vegetable-gardening, the principal topics considered are—the best soil and situation for a garden; manner of laying out a garden; irrigation of garden crops; rotation of crops; methods of planting and management; composts and commercial fertilizers; care of tools; construction, management, and uses of hot-beds and cold-frames; harvesting, marketing, and storing vegetables.

Brief historical notes, and full cultural directions, are given concerning all of the vegetable plants commonly grown in gardens.

Small fruit culture is next taken up; each kind is considered in detail as to its history, propagation, cultivation, harvesting, marketing, the best varieties, and the diseases to which it is subject.

Then follows a series of lectures upon methods of plant propagation, including a thorough discussion of budding and grafting.

Plants, tools, and other appliances are provided for class-room use in giving practical illustrations of the subject treated.

A portion of this term is devoted to Forestry. Lectures are given on the gathering and preservation of forest-tree seed, the planting of seed, and the care of seedlings; on the value of trees for timber and ornament, for hedges, screens, and shelter belts.

A second course of lectures during the Winter term of the Senior year treats of the theory of Horticulture, and considers in detail the underlying principles of garden practice; lectures are given upon the history of cultivated plants, variation of plants under cultivation, as influenced by climate, latitude, altitude, and general surroundings; cross-fertilization and hybridization. Pomology is then taken up, and the theory and practice of orchard management considered in detail.

Floriculture is also treated on such topics as the construction, heating, and management of green-houses, the propagation, cultivation, and management of green-house plants for commercial or private purposes.

LANDSCAPE GARDENING.

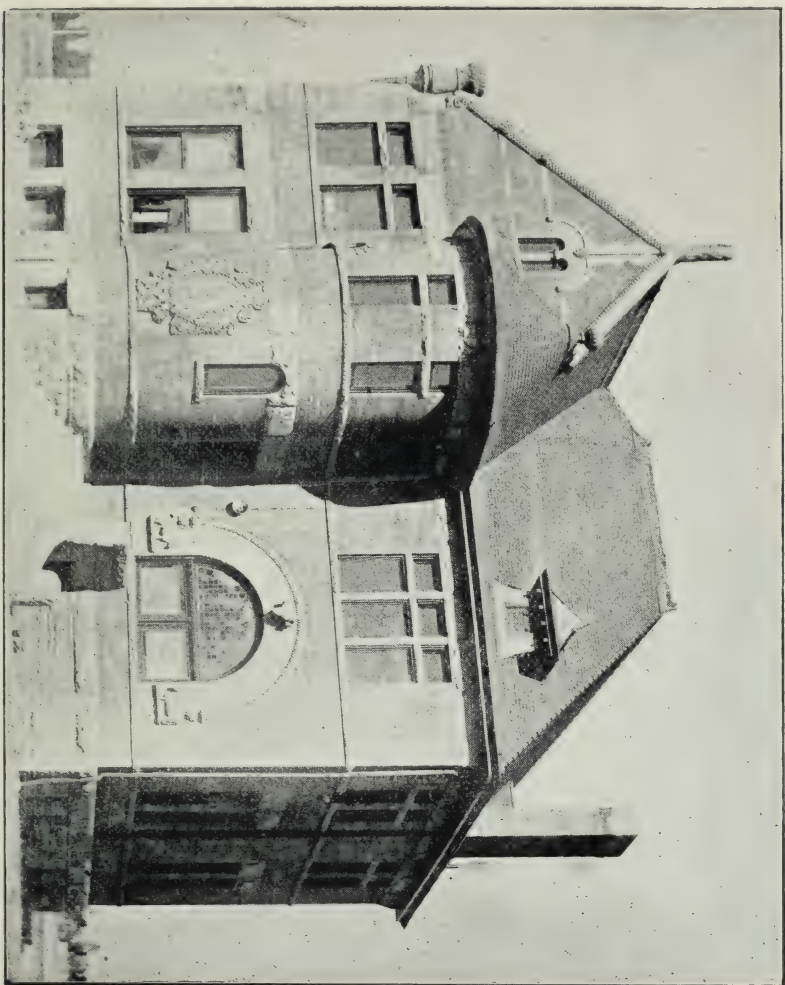
One-half of the Fall term of the Senior year is allotted to this study. The general principles of the art are taught by lectures and practical instruction given in the selection and laying out of city and country places. The principal topics are, the selection of a place, the location of buildings, drives, and walks, what to plant and how to plant. The works of Downing and Kemp are used as books of reference.

CHEMISTRY.

It is the object of this department to give the student an opportunity to acquire a thorough mastery of the elementary principles of chemical science. To attain this object, theory and practice are made to go hand in hand. In the first term of the Junior year, the class receives a series of lectures, accompanied by text-book work, upon



MECHANIC ARTS HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



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-

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J. H. McCLELLAND, - - - SUPERINTENDENT
Divide Station, Table Rock, Colorado.
CHARLES A. DUNCAN, B. S., - - - SUPERINTENDENT
San Luis Valley Station, Monte Vista, Colorado.
J. B. ROBERTSON, - - - SUPERINTENDENT
Rain-Belt Station, Cheyenne Wells, Colorado.

Register of Students.

1893-1894.

Post Graduates.

Alice Bell, B. S., '92, -----	Fort Collins, Colorado
Samuel Bell, B. S., '92, -----	" " "
Porter Johnston Preston, B. S., '92, -	Longmont, "
Lewis La Grange Stimson, B. S., '92, -	Greeley, "
Raymond F. Walter, B. S., '93, ----	Fort Collins, "

Senior Class.

Philo Kneeland Blinn, -----	Berthoud,	Colorado
Jacob Hover Cowen, -----	Hotchkiss,	"
Will Harmon Fairfield, -----	Denver,	"
Minnie Frances Harrington, --	Fort Collins,	"
Herbert Salter Kendall, -----	" "	"
Celia May Southworth, -----	Denver,	"
Harlan Thomas, -----	"	"

Junior Class.

Jean Bart Balcomb, -----	Success,	Kansas
Herbert Andrew Black, -----	Fort Collins,	Colorado
Henry Alvin Calkins, -----	Harris,	"
Edward Percy Cooke, -----	Dowagiac,	Michigan
Loren Bradley Curtis, -----	Littleton,	Colorado
Mabel Giddings, -----	Fort Collins,	"

William Franklin Gilkison,---	La Porte,	Colorado
Seth Curtis Lewis,-----	Timmath,	"
Edgar Avery Mead, -----	Greeley,	"
George William Nelson,-----	Denver,	"
Grafton St. Clair Norman, ----	Hamilton,	Ohio
Frances Christina Schelt, ----	Fort Collins,	Colorado
Walter Kolb Starbird-----	Longmont,	"

Sophomore Class.

Fred Alford,-----	Fort Collins,	Colorado
George Bloomfield, -----	Meeker,	"
Edith Gertrude Boothroyd,----	Arkins,	"
Florence Jessie Boothroyd,----	"	"
Alfred Hiram Bungardt,-----	Kansas City,	Missouri
Allen Edward Dodson,-----	Littleton,	Colorado
Nettie Evans,-----	Fort Collins,	"
Ella Gertrude Goldsborough,--	" "	"
Allen Percy Greenacre,-----	" "	"
Mabel Josephine Hahn, -----	Loveland,	"
Robinson William Hawley, ---	Fort Collins,	"
Richard Appleton Maxfield,---	Rifle,	"
Abner Sherman McKee,-----	Montrose,	"
Olof Wallfred Nyberg, -----	Pueblo,	"
Robert Winfred Sears,-----	Greenhorn,	"

Freshman Class.

(Including Irregulars.)

Emil Affolter,-----	Longmont,	Colorado
Frank Affolter,-----	"	"
Mary Affolter, -----	"	"
Henry Franklin Alps,-----	Loveland,	"
Mabel Carrie Blinn, -----	Berthoud,	"
John Jay Blinn, -----	"	"

Calla Davis Bullard,-----	Loveland,	Colorado
Charles Edward Clark,-----	Elbert,	"
Homer Curtis, -----	Littleton,	"
Roy Decker,-----	Fort Collins,	"
Walter George Decker, -----	" "	"
Sarah Gertrude Dix,-----	" "	"
Percy Golding-Dwyre,-----	" "	"
Mark Hudson Flinn, -----	Loveland,	"
Bertram Alden Gage, -----	Fort Collins,	"
George Edgar Garrett, -----	" "	"
Martha Rose Gilkison, -----	La Porte,	"
William Franklin Godsmark, -	Hot Sulphur Springs,	"
Jesse Walter Goodwin, -----	Loveland,	"
Archie Jesse Harris, -----	Fort Collins,	"
Anna Belle Hawkins, -----	Berthoud,	"
Ralph Henry Hess,-----	Loveland,	"
William Ashton Hilton, -----	"	"
Oliver Justice Horner, -----	Fort Collins,	"
Fred Steck Hotchkiss,-----	Hotchkiss,	"
Herman Howard, -----	Greeley,	"
William Ashley Howard,-----	Fort Collins,	"
Minerva Huberty,-----	" "	"
Elizabeth Ellen Ish,-----	" "	"
Edward Marion Jacobson, ----	Livermore,	"
John Edward Kiteley, -----	Longmont,	"
John August Kroeger-----	Cortez,	"
Alta Esther Lewis, -----	Timnath,	"
James Mifflin Loud, -----	Fort Robinson,	Nebraska
Earl Russell Major,-----	Denver,	Colorado
Christopher Lyster Montgomery,	Eaton,	"
Hugh Loveland Montgomery, -	Fort Collins,	"
Samuel Woodside Moore, ----	Tipton,	Iowa
Perry Hjalmar Nyberg, -----	Pueblo,	Colorado
Ida Patterson, -----	Fort Collins,	"
Bertha May Pegg,-----	" "	"

Smith Durie Philip, -----	Fort Lupten,	Colorado
Anna Laura Picken, -----	Fort Collins,	"
Mary Elizabeth Prendergast, --	" "	"
Olin Grafton Reed, -----	Fossil Creek,	"
George Henry Rist -----	Loveland,	"
Joseph Michael Roeschlaub, ---	Fort Collins,	"
Henry Morris Roeschlaub, ----	" "	"
Albert Jason Rosenow, -----	" "	"
Linnie May Rutledge, -----	Timnath,	"
Scott Fugard Sheldon, -----	Pueblo,	"
Alice Etheleen Silcott, ----	Manhattan,	"
Nora Silcott, -----	"	"
Ross Courtney Stephenson, ---	Fort Collins,	"
Hiram Hubert Tannar, -----	La Porte,	"
Edward Sharpe Gaige Titus, --	Ottawa,	Kansas
Charles Eugene Towner, ----	Fort Collins,	Colorado
William Lewis Wade, -----	Paonia,	"
Fred Montgomery Westlake, --	Florence,	"
Hoyt Douglas Whipple, -----	Berthoud,	"
Percy Warren Williams, -----	Denver,	"

Preparatory Class.

Harry Allen Arenz, -----	Denver,	Colorado
Paul Blake Benson, -----	"	"
Ezekiel Myron Bushnell, ----	Loveland,	"
Orlie Lee Buttorff, -----	Fort Collins,	"
Walter Clark Cory, -----	" "	"
William Arnett Dickens, ----	Longmont,	"
Myrna May Dix, -----	Fort Collins,	"
John Hansford Faulkner, ----	" "	"
Walter Clark Fellows, -----	Denver,	"
Frank Gallup, -----	Pueblo,	"
Harry George Hammond, ----	Fort Collins,	"
Jacob Edwards Horner, -----	" "	"

Charles Mantz Hottel,-----	Fort Collins,	Colorado
Ida Martha Lambert,-----	“ “	“
Adolph Frederick Lindon ----	Bryant,	“
John Clarence Lines,-----	Platteville,	“
Herbert Martin,-----	Alamosa,	“
Walter Willis McCain,-----	Fort Collins,	“
Catherine McGee,-----	Hastings,	Nebraska
Harry Glenn Meredith,-----	Rye,	Colorado
William Crawford Nisbet,-----	Pueblo,	“
Charles Roy Palmer,-----	Fort Collins,	“
Benjamin Dory Palmer,-----	“ “	“
Henry Read,-----	Denver,	“
Eugene Cammon Reed,-----	Fossil Creek,	“
Minnie Rockwell,-----	Fort Collins,	“
John Havener Southard,-----	“ “	“
George Washington Springer,--	New Windsor,	“
Barbara Ellen Tharp,-----	La Porte,	“
Josie Christmas Yattau,-----	Loveland,	“
Floyd Stephens Youtsey,-----	Fort Collins,	“

Special Students.

John Richard Dilworth,-----	Denver,	Colorado
Grace Gertrude Evans,-----	Fort Collins,	“
Stella Evangeline Fisk,-----	“ “	“
Isabel Margaret Furmidge, ---	Denver,	“
Tinnie Roberson Gillespie,----	Fort Collins,	“
Harry Parker Handy-----	“ “	“
Joseph Henry Lariviere,-----	“ “	“
George Morrison McKimmie,--	Denver,	“
Clara Ella Mitchell,-----	Salida,	“
Laura Belle Mitchell,-----	“	“
Helene Jeanette Rhodes,-----	Ogden,	Utah
Etta May Shafer,-----	Sardinia,	Indiana
Ella Lavene Slockett,-----	Fort Collins,	Colorado

Martha May Slockett, -----	Fort Collins,	Colorado
Elsie Snow, -----	" "	"
Sarah Elizabeth Stephenson, --	" "	"
Emma Sykes Stover, -----	" "	"
Clide Swem, -----	" "	"
Edna Maude Turk -----	" "	"
John Philip Walsh, -----	Delta,	"

Class in Agriculture.

(Short Course.)

E. A. Atherly, -----	Fort Collins,	Colorado
I. L. Bailey, -----	" "	"
Edith May Bailey, -----	" "	"
Frank Beach, -----	Lincoln,	Nebraska
Mrs. Warren Blinn, -----	Berthoud,	Colorado
Bertha V. Brooks, -----	Fort Collins,	"
Adelbert F. Brown, -----	" "	"
Charles A. Duncan, -----	Monte Vista,	"
A. L. Emigh, -----	Fort Collins,	"
E. T. Hotchkiss, -----	Hotchkiss,	"
Fred A. Huntley, -----	Rocky Ford,	"
E. F. Kerr, -----	Fort Collins,	"
Aaron Kitchel, -----	" "	"
E. A. Lee, M. D., -----	" "	"
Harvey A. Linhart, -----	Littleton,	"
J. S. McClelland, -----	Fort Collins,	"
H. S. McClelland, -----	" "	"
J. H. McClelland, -----	Monument,	"
Mrs. H. M. McClelland, -----	Fort Collins,	"
Mrs. M. E. McClelland, -----	" "	"
Oliver N. McLain, -----	" "	"
Peter C. Madsen, -----	Edwards,	"
J. D. Mandeville, -----	Fort Collins,	"
Malcom G. Mead, -----	Highland Lake,	"

Ralph E. Metcalf, -----	Fort Collins,	Colorado.
Harry Metcalf, -----	" "	"
Martie Moore, -----	" "	"
Peter F. Murphy, -----	Louisville,	"
John H. Nelson, -----	Denver,	"
Samuel E. Newell, -----	Berthoud,	"
Charles E. Pennock, -----	Bellvue,	"
J. B. Robertson, -----	Cheyenne Wells,	"
Charles E. Schaap, -----	Fort Collins,	"
Peter N. Spohn, -----	Bellvue,	"
Frank B. Springer, -----	New Windsor,	"
Alexander M. Strachan, -----	Fort Collins,	"
Anna B. Strachan, -----	" "	"
Cora A. Stone, -----	" "	"
J. B. Swan, -----	Loveland,	"
David A. Titus, -----	Fort Collins,	"
Frank L. Watrous, -----	" "	"
William F. Watrous, -----	" "	"
William H. Wells, -----	" "	"
Mrs. Jessie Patton West, -----	" "	"
Joseph R. Wills, -----	" "	"
William F. Ziemer, -----	" "	"

Summary.

	Males.	Females.	Total.
Post Graduates, -----	4	1	5
Senior Class, -----	5	2	7
Junior Class, -----	11	2	13
Sophomore Class, -----	10	5	15
Freshman Class, -----	45	16	61
Preparatory Class, -----	25	6	31
Special Students, -----	5	15	20
Agricultural Class—Short Course, --	37	9	46
Total, -----	142	56	198

GRADUATES.

1884.

George H. Glover, B. S., D. V. M., Veterinary Surgeon, ... Denver, Colorado
 Elizabeth Lawrence, B. S., *nee* Coy, at Home, Fort Collins, “
 Leonidas Loomis, B. S., Stockman, ... “ “ “

1885.

Cora B. Blinn, B. S., at Home, ... Berthoud, Colorado
 Edna L. Hice, B. S., Teacher, ... Fort Collins, “
 Lelia L. Robertson, B. S., *nee* Loomis, at Home, “ “ “
 Grace Espy Patton, B. S., Professor of English and Stenography, State Agricultural College, ... Fort Collins, Colorado
 Robert E. Trimble, B. S., Assistant Meteorologist, State Experiment Station, ... Fort Collins, Colorado
 Helen Rigden, B. S., *nee* White, at Home, ... “ “ “

1886.

Wilbert J. Sickman, B. S., Clerk of County Court, ... Fort Collins, Colorado

1887.

Eleanor F. Gill, B. S., at Home, ... Fort Collins, Colorado
 Daisy E. Stratton, B. S., Stenographer, ... “ “ “
 Lerah S. McHugh, B. S., *nee* Stratton, at Home, “ “ “
 Edwin G. Nettleton, B. S., Engineer, ... Cocorrit, Sonora, Mexico

1888.

Lewis A. Coffin, B. S., Farmer, ... Boise City, Idaho
 Harvey H. Griffin, B. S., Assistant Agriculturist, Agricultural College, ... Las Cruces, New Mexico
 Josephine Lee, B. S., Teacher, City Schools, ... Boulder, Colorado
 Genevieve E. McLain, B. S., Teacher, State Normal School, ... Peru, Nebraska

1889.

Lucy Benson, B. S., *nee* Bell, at Home, ... Loveland, Colorado
 Arthur L. Davis, B. S., Medical Student, ... Denver, “

1890.

Clarence V. Benson, B. S., LL. B., Attorney-at-Law, ... Loveland, Colorado
 Velma V. Beebe, B. S., *nee* Benson, at Home, ... " "
 Burt C. Buffum, M. S., Professor Botany and Horticulture, State University, ... Laramie, Wyoming
 Charles A. Duncan, B. S., Superintendent San Luis Valley Experiment Station, ... Monte Vista, Colorado
 Newton C. Garbutt, B. S., Attorney-at-Law, .. Fort Collins, "
 Helen E. Lunn, B. S., Book-Keeper, ... " " "
 Harry R. Temple, B. S., Steam Engineer, ... Boulder, Colorado
 Cora B. Thoman, B. S., Teacher, City Schools, .. Loveland, "
 Mary L. Weaver, B. S., B. Ph., Traveling and Studying in Europe

1891.

Charles R. Evans, B. S., Merchant, ... Fort Collins, Colorado
 Minnie E. McLain, B. S., Teacher, ... Platteville, "
 John S. Calkins, B. S., Farmer, ... Harris, "

1892.

Charles W. Beach, B. S., Student, State University, ... Champaign, Illinois
 Frank Beach, B. S., Student, State University, .. Lincoln, Nebraska
 Alice Bell, B. S., Stenographer and Teacher, .. Fort Collins, Colorado
 Samuel Bell, B. S., Teacher, ... " " "
 Don A. Carpenter, B. S., Law Student, ... Denver, "
 Porter J. Preston, B. S., State Engineer's Office, ... " "
 Albert J. Sedgwick, B. S., City Editor the *Express* Fort Collins, "
 Lewis L. Stimson, B. S., Surveyor, ... Greeley, "
 Frank H. Thompson, B. S., Surveyor, ... " "

1893.

John Bloomfield, B. S., Surveyor of Weld County, Greeley, Colorado
 Samuel L. Boothroyd, B. S., Engineer, ... Fort Collins, "
 Charles J. Gilkison, B. S., Law Student, ... " " "
 Ida M. Douglass, B. S., *nee* Lewis, Teacher, ... Timnath, "
 William J. Ralph, B. S., Druggist, ... Fort Collins, "
 Raymond F. Walter, B. S., Surveyor, ... " " "
 William W. Willard, B. S., Merchant, ... Aspen, "

ALUMNI ASSOCIATION.

OFFICERS :

PRESIDENT,	-	-	-	-	-	-	-	CLARENCE V. BENSON
VICE-PRESIDENT,	-	-	-	-	-	-	-	CORA B. THOMAN
SECRETARY,	-	-	-	-	-	-	-	RAYMOND F. WALTER
TREASURER,	-	-	-	-	-	-	-	ALBERT J. SEDGWICK

EXECUTIVE COMMITTEE.

PRESIDENT.	VICE-PRESIDENT.	SECRETARY.
GRACE ESPY PATTON.	JOHN S. CALKINS.	

COURSES OF STUDY.

Preparatory Year.

FIRST TERM.

Arithmetic	Wentworth
United States History	Montgomery
English Analysis and Composition	Reed and Kellogg
Drawing	Free-hand

Labor : { Farm, ten weeks.
 Shop, three weeks.
 Wood-carving, L.

SECOND TERM.

Arithmetic	Wentworth
United States History	Montgomery
English Analysis and Composition	Reed and Kellogg
Drawing	Free-hand

Labor : { Shop.
 Type-writing, L.

THIRD TERM.

Arithmetic	Wentworth
Civil Government	Townsend's Shorter Course
Word Analysis and Composition	Swinton
Drawing	Free-hand

Labor : { Shop, two weeks.
 Garden, nine weeks.
 Molding, L.

Military Drill daily. Ladies take Calisthenics two hours per week. Rhetorical work one hour per week. Readings from American Men of Letters one hour per week.

The Course from this point is separated into:

1. The Agricultural Course.
2. The Mechanical Engineering Course.
3. The Irrigation Engineering Course.
4. The Ladies' Course.

All lead to the degree of Bachelor of Science.

Freshman Year.

FIRST TERM.

Algebra	Taylor
Composition and Rhetoric	Lockwood
Botany	Gray's Lessons
History	Sheldon
Labor: {	Garden, ten weeks; shop, three weeks, A., I.
	Shop, M.
	Wood-carving, L.

SECOND TERM.

Plane Geometry	Taylor
History	Sheldon
Drawing	Instrumental
Agriculture, A., I., L.	Lectures
Carpentry and Joinery, M.	Goss
Labor: {	Shop, A., I., M.
	Type-writing, L.

THIRD TERM.

History	Sheldon
Drawing	Instrumental
Botany	Gray, with Coulter's Flora
Plane Geometry, 1-4; Algebra, 3-4	Wentworth—Taylor
Labor: {	Shop, two weeks; farm, nine weeks, A., I.
	Shop, M.
	Molding, L.

Military Drill daily. Rhetorical work one hour per week. Readings from American Men of Letters and American Orators one hour per week. Calisthenics two hours per week for ladies.

Sophomore Year.

FIRST TERM.

Physiology.....	Martin
Book-keeping, Double Entry	Gay
Rhetoric.....	Genung
Algebra, 1-4; Trigonometry, 3-4	Taylor—Wentworth
Labor: {	Shop, 1-2; Physiology, 1-2, A., I., M.
	Home Hygiene, 1-2, L.
	Physiology, 1-2, L.

SECOND TERM.

Literature, L.....	Kellogg—Library
Physics	Deschanel
Physiology	Martin
Drawing, A., L.....	Instrumental and Free-hand
Solid Geometry, I., M.....	Wentworth
Descriptive Geometry, I., M.....	Waldo
Farm Buildings and Roads, A.....	Lectures
Labor: Physics.	

THIRD TERM.

Literature, L.....	Kellogg—Library
Physics	Deschanel
Surveying, A., I., M.....	Hodgman
Drawing, L.....	Free-hand
Ethics, A., L.....	Lectures
Algebra, I., M.....	Taylor
Descriptive Geometry, I., M.....	Waldo
Agriculture, A.....	Lectures
Labor: Physics, 1-2; Surveying, 1-2, A., I., M.	
Readings in Literature ten hours per week, 1-2, L.	

Military Drill daily. Rhetorical work one hour per week. Readings from English Men of Letters one hour per week. Calisthenics two hours per week for ladies.

Agricultural Course.

JUNIOR YEAR.

FIRST TERM.

Horticulture	Lectures
Chemistry	Norton
Physics	Deschanel
Landscape Gardening, 1-2	Lectures
Meteorology, 1-2	Lectures
Labor: Horticulture, 2-5; Chemistry, 3-5.	

SECOND TERM.

Chemistry	Norton
Geology	Dana
Zoology	Colton's Manual and Lectures
Zoological Laboratory	
Labor: Chemistry.	

THIRD TERM.

Agricultural Chemistry	Storer
Entomology	Lectures
Geology	Dana
Irrigation Hydraulics	Lectures
Labor: Chemistry, 3-5; Entomology, 2-5.	

SENIOR YEAR.

FIRST TERM.

Agricultural Chemistry	Storer
Agriculture	Lectures
Psychology	Hill
Logic	Gregory
Labor: Chemistry.	

SECOND TERM.

Physiological Botany	Strasburger
Horticulture	Lectures
Agriculture	Lectures
Constitution	Andrews
Labor: Physiological Botany.	

THIRD TERM.

Agriculture	Lectures
Political Economy	Mill
Recent History	Library
Labor: Farm, 1-2; Garden, 1-2.	

Military Drill daily. Rhetorical work one hour per week throughout the course.

Mechanical Course.

JUNIOR YEAR.

FIRST TERM.

Foundry Practice.....	West
Chemistry.....	Norton
Physics.....	Deschanel
Higher Algebra.....	Taylor
Labor: Shop, 2-5; Chemistry, 3-5.	

SECOND TERM.

Chemistry.....	Norton
Geology.....	Dana
Analytic Geometry.....	Wentworth
Drawing.....	Instrumental
Labor: Chemistry.	

THIRD TERM.

Drawing.....	Instrumental
Calculus.....	Taylor
Elements of Mechanism.....	Stahl and Woods
Work-Shop Appliances.....	Shelley—Rose
Labor: Shop.	

SENIOR YEAR.

FIRST TERM.

Drawing.....	Instrumental
Calculus.....	Taylor
Logic.....	Gregory
Psychology.....	Hill
Labor: Shop.	

SECOND TERM.

Drawing.....	Instrumental
Strength of Materials.....	Merriman
Transmission of Power.....	Lectures
Steam Engine.....	Holmes
Boilers.....	Wilson
Labor: Shop, 4-5; Testing Materials, 1-5.	

THIRD TERM.

Special Chemistry.....	Blair—Winkler and Lunge
Special Machines.....	Lectures
Political Economy.....	Mill
Labor: Chemistry.	

Military Drill. Rhetorical work one hour per week throughout the course.

Irrigation Course.

JUNIOR YEAR.

FIRST TERM.

Irrigation Engineering	Lectures—Wilson
Physics	Deschanel
Higher Algebra	Taylor
Horticulture	Lectures
Labor: Horticulture, 2-5; Engineering, 3-5.	

SECOND TERM.

Reservoirs and Dams, 1-2	Lectures—Merriman
Hydraulic Construction, 1-2	Lectures
Analytic Geometry	Wentworth
Geology	Dana
Drawing	Instrumental
Labor: Engineering.	

THIRD TERM.

Canal Engineering	Lectures—Flynn
Agricultural Hydraulics	Lectures
Calculus	Taylor
Drawing	Instrumental
Labor: Engineering.	

SENIOR YEAR.

FIRST TERM.

Calculus	Taylor
Chemistry	Norton
Logic	Gregory
Hydrography, 1-2	Lectures
Meteorology, 1-2	Lectures
Labor: Engineering, 2-5; Chemistry, 3-5.	

SECOND TERM.

Chemistry	Norton
Strength of Materials	Lectures—Merriman
Constitution	Andrews
Drawing	Instrumental
Labor: Chemistry, 4-5; Testing of Materials, 1-5.	

THIRD TERM.

Hydraulics	Lectures
Trusses and Bridges	Burr
Political Economy	Mill
Labor: Engineering.	

Military Drill daily. Rhetorical work one hour per week throughout the course.

Ladies' Course.

JUNIOR YEAR.

FIRST TERM.

Typewriting.....	
Chemistry.....	Norton
Physics.....	Deschanel
Horticulture.....	Lectures
Labor: Typewriting, 2-5; Chemistry, 3-5.	

SECOND TERM.

Chemistry.....	Norton
Geology.....	Dana
Zoology.....	Colton's Manual with Lectures
Typewriting.....	
Labor: Chemistry.	

THIRD TERM.

Chemistry of Common Life.....	Johnston
Geology.....	Dana
Recent History of America.....	Library
Stenography.....	Scott—Browne
Labor: } Chemistry. } Geology.	

SENIOR YEAR.

FIRST TERM.

Logic.....	Gregory
Psychology.....	Mill
Landscape Gardening, 1-2.....	Lectures
Meteorology, 1-2.....	Lectures
Philosophy of History.....	Lectures
Labor: History, ten hours per week, Library.	

SECOND TERM.

Physiological Botany.....	Lectures
Psychology (Applied).....	Hill and Lectures
Constitution.....	Andrews
Stenography.....	Scott—Browne
Labor: Physiological Botany.	

THIRD TERM.

Recent History of Europe.....	Library
Political Economy.....	Mill
Sociology.....	Lectures
Labor: History, ten hours per week, Library.	

Rhetorical work one hour per week throughout the course.
Calisthenics two hours per week throughout the course.

RECITATION SCHEME---Fall Term.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	U. S. History.	Composition and Rhetoric. Algebra.	Rhetoric.	Horticulture. Foundry Practice.	Logic.
9 a. m.	English Analysis.	History. Botany.	Algebra and Plane Trigonometry.	Chemistry. Irrigation Engineering.	Psychology. Chemistry.
9:50 a. m.	Drawing.	Botany. Composition and Rhetoric.	Physiology.	Physics.	Agricultural Chemistry. Calculus. Philosophy of History.
10:40 a. m.	Arithmetic.	Algebra. History.	Book-keeping.	Higher Algebra. Meteorology. 1-2; Land-scapes Gardening. 1-2. Typewriting.	Drawing. Meteorology. 1-2; Agriculture. Hydrography. 1-2; Landscape Gardening. 1-2.
11:30 a. m. to 12:20 p. m.	Calisthenics and Military Drill.				
1:30 p. m. to 3:30 p. m.	Farm. 3-4. Shop. 1-4. Wood Carving.	Garden. 3-4. Shop. 1-4. Wood Carving.	Shop. 1-2. Home Hygiene. 1-2. Physiology. 1-2.	Horticulture. 2-5; Shop. 2-5; Typewriting. 2-5; Chemistry. 3-5. Engineering.	Chemistry. Shop. Engineering. 2-5; Chemistry. 3-5. Historical Reading.

RECITATION SCHEME---Winter Term.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR.
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:10 a. m.	English Analysis.	Agriculture. Carpentry and Joinery.	Drawing. Literature.	Zoological Laboratory. Typewriting. Analytic Geometry.	Horticulture. Strength of Materials. Stenography.
9:00 a. m.	Drawing.	History.	Solid Geometry. Farm Buildings and Roads. Drawing.	Zoology. Drawing.	Physiological Botany. Drawing.
9:50 a. m.	U. S. History.	Plane Geometry.	Physiology.	Reservoirs and Dams, 1-2; Hydraulic Con- struction, 1 2. Chemistry.	Agriculture. Trans- mission of Power. Chemistry. Psychology (applied).
10:40 a. m.	Arithmetic.	Drawing.	Physics.	Geology.	Constitution. Steam Engine.
11:30 a. m. to 12:20 p. m.	Calisthenics and Military Drill.				
1:30 p. m.	Shop. Typewriting.	Shop. Typewriting.	Physics.	Chemistry. Engineering.	Physiological Botany. Shop, 4-5; Testing Materials, 1-5. Chemistry, 4-5.
3:30 p. m.	Shop.	Shop.	Descriptive Geometry.		

RECITATION SCHEME---Spring Term.

TIME.	PREPARATORY.	FRESHMAN.	SOPHOMORE.	JUNIOR.	SENIOR
7:55 a. m.	General Assembly of Students for Chapel Exercises.				
8:40 a. m.	Civil Government.	Botany. Drawing.	Physics.	Calculus, Entomology. Chemistry of Common Life.	Political Economy.
9:40 a. m.	Word Analysis.	Drawing. Botany.	Agriculture. Literature. Algebra.	Geology. Canal Engineering. Workshop Appliances.	Sociology. Hydraulics. Special Machines.
9:50 a. m.	Arithmetic.	History.	Surveying. Drawing.	Agricultural Chemistry. Stenography. Drawing.	Agriculture. Trusses and Bridges.
10:40 a. m.	Drawing.	Geometry and Algebra.	Ethics.	Recent History. Hydraulics. Elements of Mechanism.	Recent History. Special Chemistry.
11:30 a. m. to 12:20 p. m.	Calisthenics and Military Drill.				
1:30 p. m. to 3:30 p. m.	Shop, 1-6; Garden, 5-6. Molding.	Shop, 1-6; Farm, 5-6; Shop. Molding.	Physics, 1-2; Surveying, 1-2. Readings in Literature, 1-2.	(Chemistry, 3-5; Entomology, 2-5. Shop. Engineering. Geology, 2-5.	Farm, 1-2; Garden, 1-2. Chemistry. Engineering. Readings in History.
3:30 p. m.			Descriptive Geometry.		

DEPARTMENTS OF

Instruction and Labor.

AGRICULTURE.

By means of intelligent experimental work, conducted on the College Farm and at the Experiment Station, in which student labor is given a prominent place, a very practical training is given.

A greater effort than ever before is being made by the authorities to provide a thorough course of instruction in the School of Agriculture, designed especially to educate the students for agricultural pursuits and scientific investigations.

THE REGULAR AGRICULTURAL COURSE.

Special agricultural work is begun in the Winter term of the Freshman year. The subjects considered are stock-breeding and the care of breeding stock. In the Sophomore year, farm buildings and farm roads receive attention. The Spring term of this year is devoted to dairying, with special reference to butter-making.

In the Junior year, the students take up the general subject of Agricultural Chemistry, with special reference to the fertilization and cultivation of crops.

In the first term of the Senior year, there is further instruction in regard to soils and practical irrigation. A large part of the year is given up to the subject of live

stock in its various branches; the care and feeding of horses, cattle, sheep, and hogs; the preparation of food, ensilage, soiling, etc.

The whole course is illustrated by the experimental work always in progress and is supplemented by daily practical work on the farm and in the laboratory.

This four-year Agricultural Course is designed to give to the student a thorough knowledge of the principles and practices of Agriculture, and at the same time to provide enough training in other branches of learning to furnish a well-rounded education that shall fit him for the general affairs of life.

For the benefit of those who cannot spend so long a time in study, and wish to do special work in Agriculture, there has been arranged the following:

TWO-YEAR COURSE IN AGRICULTURE.

FIRST YEAR.

First term—1. Agriculture. 2. Botany. 3. Book-keeping. 4. Composition and Rhetoric. Labor, garden.

Second term—1. Agriculture. 2. Zoology. 3. Physics (elementary). 4. Drawing. Labor, shop.

Third term—1. Agriculture. 2. Botany. 3. Drawing. 4. Entomology. Labor, farm.

SECOND YEAR.

First term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Physiology. Labor, chemical laboratory.

Second term—1. Agriculture. 2. Horticulture. 3. Chemistry. 4. Physiology. Labor, chemical laboratory.

Third term—1. Agriculture. 2. Agricultural Chemistry. 3. Drawing. 4. Irrigation Hydraulics. Labor, chemical laboratory. Military drill throughout the course.

SHORT COURSE IN AGRICULTURE.

The past winter there was held the first session of a four-week Short Course in Agriculture, for the benefit of those who are not at liberty to attend regular College classes and who yet feel the need of more agricultural education.

The Course was a decided success. Many farmers, both old and young, availed themselves of the privileges and showed by their words and actions that they appreciated the opportunities offered them.

The Course will be repeated next winter with some enlargements and additions. It will continue four weeks from Monday, January 7, 1895, to Friday, February 1, 1895.

REQUIREMENTS FOR ADMISSION.

Applicants for admission to the Short Course in Agriculture must be at least sixteen years of age and have had training in the ordinary common-school studies.

No entrance examination will be required, and all persons fitted for the work will be admitted without distinction of sex.

EXPENSES.

The State Board of Agriculture has abolished all fees at The State Agricultural College, hence the students of the Short Course in Agriculture will not be required to pay tuition; no laboratory or shop fees will be charged, and no charges made for the use of chemicals and apparatus.

Board can be obtained in private families at \$3.00 to \$4.00 per week.

The students of this Course will have all the privileges of the library, reading-room, museum, etc., the same as other students.

COURSE OF INSTRUCTION.

Instruction will be given by lectures and by work in the shops and laboratories. The regular daily programme will consist of three lectures, and two hours in the laboratory, shop, or greenhouse.

Stock Feeding—Eight Lectures. The relative value of stock foods; feeding standards; feeding for beef, mutton, pork, milk, butter, etc.; ensilage and the silo; winter shelter for stock; preparation of food—cutting, steaming, grinding, etc.

Dairying—Eight Lectures. Selection and care of dairy stock; dairy breeds; composition and secretion of milk; care and handling of milk; butter and cheese making; milk testing; paying by test at creameries and cheese factories; profitable use of skim milk and buttermilk.

Irrigation Hydraulics—Twelve Lectures. Water supply: measurement of water; duty of water; storage of water; reservoirs; methods of irrigation; irrigation in other countries.

Horticulture — Eight Lectures. Grasses and forage crops; orchard crops and small fruits; grafting; other methods of propagation; improvement through seed selection; cross fertilization; variation.

Entomology—Six Lectures. Insects injurious to farm and garden crops; insect enemies of orchards and small fruits; parasites of domestic animals; methods of preparing and using insecticides; beneficial insects.

Agricultural Chemistry — Five Lectures. Soils and their formation; the nutrition of plants; manures, natural and artificial; fertilizing value of feed stuffs; green manuring.

Farm Machinery and Tools—Three Lectures. Care and use of wood-working tools; care of farm machinery; repairing farm machinery.

The Science of Government—Two Lectures.

In addition to these courses of lectures there will be single lectures by specialists on the following subjects:

The Care and Breeding of Draft Horses.
The Relation of Sheep to Colorado Agriculture.
The Winter Feeding of Hogs.
The Best Breeds for Dairying.
Poultry Raising.

Arrangements will be made for a short course of lectures on Domestic Economy for farmers' wives and daughters.

AFTERNOON WORK.

For two weeks, the practical work of the afternoon will be devoted to the subjects of Irrigation, Horticulture, Entomology, and to work in the Mechanical Department. The afternoons of the other two weeks will be spent in the laboratory and dairy—handling milk, running the separator, ripening the cream, and making butter. Considerable time will also be given to testing milk and to the detection of adulteration in milk and its products.

PHYSIOLOGY

is taught during the first and second terms of the Sophomore year, Martin's Human Body being used as a text-book. Aside from the daily recitations, students spend two hours a day, during the last half of the first term, in the laboratory, to study human and comparative osteology and histology, and to dissect anæsthetized animals, for the purpose of making a careful study of the various organs.

The laboratory is well-equipped, possessing, among other things, a fine series of mounted skeletons, an expensive manikin (a life-sized model of the human body so dissected as to show nearly every tissue and organ that can be seen in an actual dissection), enlarged papier mache models of the eye, ear, brain, and other important parts; also compound and dissecting microscopes, microtomes, and dissecting instruments.

HOME HYGIENE.

This subject is taught during the first six weeks of the first term of the Sophomore year in the Ladies' Course. Instruction is given in those subjects that have to do with health in the home as, the prevention of disease, micro-organisms and disease, care of the sick, care of the home, care of children, food, clothing, exercise, etc.

ZOOLOGY

is taught in the second term of the Junior year in the Agricultural Course and the Ladies' Course. This branch of natural science is taught by means of lectures and actual demonstrations in the laboratory. Each student is furnished with typical forms of the different branches of the animal kingdom, which he studies carefully, making drawings and taking notes. In this manner, the student acquires a practical knowledge of the structure and classification of animals, that he cannot obtain by a mere study of books.

Microscopes, dissecting tools, and all necessary equipment for laboratory work are furnished free, each student being required to care for his own instruments.

ENTOMOLOGY

is taken in the third term of the Junior year in the Agricultural Course, and is taught by lectures and laboratory work. Each student gets together and classifies a collection of insects representing all the orders, and carries a few species through all their transformations, taking notes and making drawings and descriptions.

Particular attention is given to the economic features of this study. Those insects known to be injurious are given special attention, and the students are made familiar with their habits and natural histories. Stu-

dents also prepare the principal insecticide substances and apply them for the destruction of insects.

In connection with this department are a good apiary and honey-house, thoroughly equipped with the most modern appliances, and students so desiring are taught and allowed to put into practice all the manipulations of the apiary.

Students taking this study are required to purchase Packard's Entomology for Beginners.

BOTANY.

The study of Botany begins with the Freshman year. The Fall term is devoted mainly to Structural Botany. The plant as an individual is studied as to its parts or organs—the relation each part bears to the whole—the variations in the parts, and the uses they serve. Roots, branches, buds, leaves, flowers, and fruits are placed in the students' hands, and the technical descriptive terms are learned by applying them directly to the plants.

Gray's Lessons is used as text to supplement the instruction from the plants themselves. A few lectures on classification and the relations of plants to each other are given toward the close of this term.

The Spring term of the same year is devoted to Systematic Botany. Dissecting microscopes and necessary tools are furnished and plants are each day supplied for analysis. Students are taught the application of the principles learned during the first term, so that they may understand the methods of determining the names of plants. The great variety of plants at hand enables the student to become familiar with all the leading natural orders. Written descriptions of the plants analyzed are required. Coulter's Manual of Rocky Mountain Botany is the text-book used.

PHYSIOLOGICAL BOTANY.

In the Winter term of the Senior year, the Agricultural students study vegetable physiology and the minute structure of plants, using as a text-book Strasburger's Practical Botany.

Compound microscopes are supplied and the Botanical laboratory is open to members of the class two hours each afternoon.

An herbarium of native and foreign plants and the green-house furnish material for study.

A portion of this term is devoted to Cryptogamic Botany, special attention being given to rusts, smuts, and mildews injurious to plants.

The laboratory is well equipped with books of reference and with all necessary apparatus and reagents.

HORTICULTURE.

Instruction in Horticulture is given by lectures. The first course of thirteen weeks, in the Fall term of the Junior year, deals mainly with methods. Under the general head of Vegetable-gardening, the principal topics considered are—the best soil and situation for a garden; manner of laying out a garden; irrigation of garden crops; rotation of crops; methods of planting and management; composts and commercial fertilizers; care of tools; construction, management, and uses of hot-beds and cold-frames; harvesting, marketing, and storing vegetables.

Brief historical notes, and full cultural directions, are given concerning all the vegetable plants commonly grown in gardens.

Small-fruit culture is next taken up; each kind is considered in detail as to its history, propagation, cultivation, harvesting, marketing, the best varieties, and the diseases to which it is subject.

Then follows a series of lectures upon methods of plant propagation, including a thorough discussion of budding and grafting.

Plants, tools, and other appliances are provided for class-room use in giving practical illustrations of the subject treated.

A portion of this term is devoted to Forestry. Lectures are given on the gathering and preservation of forest-tree seed, the planting of seed, and the care of seedlings; on the value of trees for timber and ornament, for hedges, screens, and shelter belts.

A second course of lectures during the Winter term of the Senior year treats of the theory of Horticulture, and considers in detail the underlying principles of garden practice; lectures are given upon the history of cultivated plants, variation of plants under cultivation, as influenced by climate, latitude, altitude, and general surroundings; cross-fertilization and hybridization. Pomology is then taken up, and the theory and practice of orchard management considered in detail.

Floriculture is also treated on such topics as the construction, heating, and management of green-houses, the propagation, cultivation, and management of green-house plants for commercial or private purposes.

LANDSCAPE GARDENING.

One-half of the Fall term of the Senior year is allotted to this study. The general principles of the art are taught by lectures and practical instruction given in the selection and laying out of city and country places. The principal topics are, the selection of a place, the location of buildings, drives, and walks, what to plant and how to plant. The works of Downing and Kemp are used as books of reference.

CHEMISTRY.

It is the object of this department to give the student an opportunity to acquire a thorough mastery of the elementary principles of chemical science. To attain this object, theory and practice are made to go hand in hand. In the first term of the Junior year, the class receives a series of lectures, accompanied by text-book work, upon the general theory of the science, its history and development. In this course of lectures are discussed the subjects of acids, bases and salts, and the principles of chemical philosophy. The natural history, chemical and physical properties of each of the elements are discussed in detail, the whole being illustrated by experiments. While taking this course, the student spends two hours each day in the chemical laboratory, repeating the experiments shown in the class-room, and making others which may be suggested, thus familiarizing him with the various forms of compounds, the marked distinctions between the different classes of salts, the use of chemical nomenclature, and the manipulation of apparatus. Practice in the use of the blow-pipe accompanies this work, and an insight into determinative mineralogy is thus acquired. The use and application of the spectroscope are also taught. The students in the laboratory, at the end of the first term, are examined in the text-book and by analysis of *unknown bodies* in the dry way.

In the second term of the Junior year, the Inorganic Chemistry is finished and Organic Chemistry is taken up. The laboratory work continues four-fifths of the term, and the student takes up the tests for the bases and their separation; also, the tests for the acids and their separation. The students are examined at the close of the second term by means of unknown bodies, composed of mixtures of the several groups of bases.

In the third term of the Junior year the class completes Organic Chemistry, with some practice in Chemical Physics and Stoichiometry. In the laboratory, the separation of the bases and acids is reviewed, tests for the poisons are made, their separation from organic mixtures is worked out, and the analysis of organic compounds is carried on.

In the Agricultural course, in the second and third terms of the Junior year, the students listen to a course of lectures upon Agricultural Chemistry, in which are discussed such subjects as the following: Relation of Chemistry to Agriculture, the literature of Agricultural Chemistry, elements of plant growth, their relative abundance and importance, the atmosphere, the soil, fertilizers, etc. Storer's Agriculture, Johnson's "How Crops Grow" and "How Crops Feed" are used as reference books. Laboratory work accompanies the lectures and work in the text-books. The study of quantitative analysis begins in the gravimetric way, and, after some little practice, students will be directed in any line of special work they may desire.

Keeping in mind the object for which our College is founded, we have so planned our Chemical course as to prepare the student for the general application of Chemistry to the industrial arts, while seeking thoroughly to ground him in the application of science to agriculture. A chemical laboratory, fitted up with modern appliances, balance-room, foul-gas room, and desks for thirty-six students, is ready for the classes.

Students have access to the following current chemical literature: *Chemical News*, *Analyst*, *Journal of the Chemical Society*, *Journal fur Landwirtschaft*, *Journal of Analytic Chemistry*, and "Fresenius Zeitschrift fur Analyt. Chemie."

GEOLOGY.

Recognizing the fact that Chemistry and Geology are the foundations of agricultural science, the subject of Geology receives corresponding attention. The second term of the Junior year, Dana's New Text-Book of Geology is taken up and continued during the year. The students work two hours, three days per week, in the laboratory. Lectures on Economic Geology are also given. Frequent visits to the mountains and quarries illustrate the practical application of dip, strike, fault, etc. At the end of the third term the students are required to identify and describe twenty-five rocks or mineral specimens.

HISTORY AND LITERATURE.

No education is well rounded without a fair knowledge of History and English Literature.

Excellent opportunities are furnished for the study of these subjects throughout almost the entire course.

United States History, as studied during the greater part of the Preparatory year, takes up the subject with considerable thoroughness, and includes some work in American Literature.

Throughout the whole of the Freshman year, Sheldon's General History is used as a text-book. The most advanced methods are employed. The student is taught to reason about historical events and is required to consult books of reference.

Kellogg's Literature is begun when the class has reached the subject of English History. Thus each historic period and the authors of that period may be considered together. The class-work is supplemented by lectures.

During the last two terms of the Sophomore year, members of the Ladies' Course engage in a more ex-

tended study of English and American Literature, including critical readings from selected authors, and special attention to the writings of the five greatest English poets. Every effort is made to promote a taste for the best literature.

During the last term of the Junior year, the Recent History of America is studied by members of the Ladies' Course.

In the Senior year, one term is devoted to the Philosophy of History, and includes such subjects as—our historical resources; laws governing human actions; influence of physical laws over society and human character; influence of religion, literature, and government; development of historical literature; and causes of progress in civilization.

One term of the Senior year is devoted to study of the Recent History of Europe, and eight hours a week are given, by the young ladies, to special reading and investigation in the historical subjects which are pursued during two terms of the Senior year.

A valuable collection of photographs belongs to this department and adds greatly to the interest of its historical work.

The College Library also affords substantial help. Its shelves are well filled with standard literature and with the works of the best historians.

ENGLISH AND STENOGRAPHY.

ENGLISH.

The study of English Analysis is pursued during the Fall and Winter terms of the Preparatory course, followed by Word Analysis during the Spring term.

Composition is taught throughout the Preparatory year, the subjects of punctuation, capitalization, structure

and arrangement of sentences, and the fundamental principles of style receiving special attention.

During the Fall term of the Freshman year, the subject of Composition and Rhetoric is continued, with Lockwood's Lessons in English for a text-book. It is the object of this work to enable the student to acquire skill in the logical arrangement of his thoughts, and to express them in a clear and effective manner.

Advanced work in Rhetoric is required of the Sophomore class during the Winter term. The laws of mind and language as related to effective discourse, is a subject which receives special consideration.

Composition writing—essays, orations, etc.,—forms an important feature of the entire course in English.

STENOGRAPHY.

Stenography and Typewriting occupy a prominent place in the Ladies' Course.

The object of the work in these branches is to impress upon the mind of the student the importance of a knowledge of the English language and a correct use of the same in business life, as well as to enable him to become an efficient stenographer and typewriter.

A practical course in book-keeping is given in the Fall term of the Sophomore year.

MATHEMATICS.

The purpose of the instruction offered by this Department is two-fold: First, to give the student clear and exact ideas of magnitudes and their measurement, the principles underlying the methods used, and the general unity pervading the mathematical sciences, or such of them as he has time to become acquainted with; second, to give him such skill in computation as to enable him

to handle easily and satisfactorily the practical problems he is likely to encounter in his after life.

The subjects offered are as follows :

ARITHMETIC

is taught the students of the Preparatory class. The year's work is designed to give a thorough review of the principles underlying the fundamental operations, and to give skill in the application of these to the various problems of business arithmetic.

ALGEBRA

is begun in the first term of the Freshman year. The first term's work is designed to give the student as clear ideas as possible of the extensions introduced into the fundamental operations of arithmetic by the notation of two sorts of quantities directly opposed in character, and of the conciseness obtained by the use of literal notation ; and to give him sufficient skill in the fundamental operations of Algebra to enable him to solve intelligently simple equations involving one unknown number. Subsequent work acquaints him with the solution of simple equations of several unknown numbers, with involution, evolution, radicals, quadratic equations, and as much more as may be possible in the time allowed to the subject.

GEOMETRY

is taken up as soon as the student is sufficiently acquainted with algebraic methods to apply them intelligently to the computations of this subject. In the two terms allotted to the study it is designed to give the student thorough practice in formal proof by the syllogistic method, to show him the dependence of the entire subject upon the few axioms and elementary concepts derived directly from experience, and to give him thorough practice in the mensuration of geometric magnitudes. So far

as the time and ability of the student will permit, he is practiced upon original exercises.

TRIGONOMETRY

is taught in the first part of the Sophomore year. In the time allotted to this branch, the student is given clear ideas of the trigonometrical concepts, shown their connection, and given considerable practice in the practical application of this branch of Mathematics.

DESCRIPTIVE GEOMETRY

is taught to those students electing the two courses in Engineering. The second and third terms of the Sophomore year are devoted to this subject. The principles of parallel and central projection, of development, etc., are discussed and illustrated in the solution of a great variety of problems, and many of these are accurately worked out on the draughting-board by each student.

From the wide application of Mathematics in all branches of Engineering, those students electing either of the courses having to do with Engineering, pursue the study of Mathematics throughout the entire course, with the exception of the last two terms of the Senior year.

The first term of the Junior year is devoted to a brief review of quadratics and radicals, and to the study of the principal algebraic methods usually denoted by the name Higher Algebra. Among the subjects considered are Series of various sorts; Mathematical Induction and some of its applications, such as the demonstration of the Binomial Formula; the Theory of Equations; and various methods of solution of equations of the third and higher degrees.

The second term of the Junior year is devoted to the study of Analytic Geometry. The student is made acquainted with the method of co-ordinates, and the connection between algebraic and geometric forms. The

fundamental properties of the conic sections are developed, and as much more of the subject as the time permits.

The last term of the Junior and the first term of the Senior years are devoted to the study of Differential and Integral Calculus. Taylor's Calculus is used as a text-book, and the study is pursued substantially as the subject is there developed. The notion of limits is, however, made the logical basis upon which the subject is developed.

The department is provided with a set of Schroeder models from Darmstadt, for purposes of illustration in the study of Solid Geometry, and with models of warped surfaces, etc. The collection is being added to from time to time. There is a collection of drawings for use in the study of curves and curve-tracing.

MECHANICAL ENGINEERING.

This course is designed to prepare students for the profession of Mechanical Engineering. It teaches the general principles of engineering and unites theoretical work and practical research to accomplish this end. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines and motors.

As the course in Mechanical Engineering is, in part, designed to enable the student to solve those problems relating to the generation and transmission of power and its application to machines, much of his time is spent in the drawing-room, workshops, and experimental laboratory. The studies of this course which are in common with other courses (Mathematics, etc.) are enumerated and described elsewhere in this catalogue; the others are:

Carpentry and joinery ; also wood-working machinery.
Pattern making and foundry work.

Forge work.

Machine and vise work in metals.

Principles of mechanism.

Strength of materials.

Boilers.

The steam engine.

Machine design, machinery and mill work.

Carpentry and Joinery — The class-room work, by means of text-books and lectures, takes up the study of the cutting edge of various wood-working tools and machinery and the means of keeping them in good order ; an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out the work, cutting speed of tools, etc. ; the shrinkage and warping of woods and the different modes of sawing into lumber and the various forms and uses of framing and other joints.

Pattern-making and Foundry Work are similarly taught. The most advantageous forms of patterns are discussed with regard to the proper distribution of the metal and best form for molding in the foundry, and, in connection, instruction in core-making and the management of the cupola and brass furnace.

Forge Work, etc., is taught by lectures on iron and steel, and especially with reference to their management in the fire and in the processes of tempering, hardening, and annealing.

Machine Work and Vise Work are taught in a similarly thorough and careful manner.

Principles of Mechanism are studied with reference to the combinations of which machines are composed ; and the study of designs for the communication of motion by

means of gears, belts, links, etc., forms an important feature of this course.

Strength of Materials is considered by examining the physical properties of the various materials used in construction.

Machine Design is taken up for one term, and the students make designs for various machines and appliances.

Boilers—The various forms are carefully studied from the best authors, and the Department has access to a number of different kinds of boilers upon which actual tests may be made.

The *Steam Engine* is studied in its various forms in general and in detail. The Department has a pair of indicators and all appliances necessary for complete engine tests.

Machinery and Mill Work receive attention, and methods of arranging shops and machinery are investigated; and the transmission of power for shop purposes is studied.

The care and management of shops and the making of estimates are also considered; shop building and appliances receive careful attention.

Attention is called to the combination of the theoretical and practical instruction here offered. Thorough and careful instruction is given with, or is supplemented by, the most practical application of the same in all ways. In every instance where it is possible the work of the class-room is supplemented by work in a corresponding laboratory, where the experimental work is performed according to the latest and most approved methods with the best machines and materials. The practical applications of mechanical theories broaden the conceptions of these truths and make them easier to grasp and more easily retained; by studying the construction of machines

the abstract mathematical laws are better understood and their significance becomes more evident.

The shop instruction is divided into courses, and in each course are given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.

COURSE OF LABOR.

Bench work in wood	13 weeks
Wood-turning	12 "
Pattern-making	12 "
Molding and casting	12 "
Iron and steel forging	13 "
Machine work in metals	12 "
Vise work in metals	12 "

BENCH WORK IN WOOD.

This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First—The use of planes in joining, smoothing, and getting the piece out of wind, lining off, and the use of saws in cutting across and with the grain, and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle.

MACHINE WORK IN WOOD.

In connection with this course, with the use of tools, will be given the most rapid and economical method of

selecting and preparing the wood for the machine. There will be given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools; examples in chuck work in separate and combined pieces; how to turn a ball.

PATTERN-MAKING AND FOUNDRY WORK.

After becoming familiar with bench and machine work in wood, an application of both is made, by constructing patterns with due regard to shrinkage, draft, and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There will be given examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry-room by the students, where molds and cores are made, and castings are made in iron or brass.

In the foundry, the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

MACHINE WORK IN METAL.

The care and management of the tools, their construction, etc.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals. Centering and straightening work; straight turning and squaring; boring; making and fitting joints; chuck work; screw cutting, inside and outside; drilling, tapping, and reaming; boring with boring-bar and use of center rest; polishing and finishing; hand-tool work.

DRAWING.

Free-hand copy and dictation ; free-hand model and object drawing ; light and shade ; geometric problems ; orthographic and isometric projections and projection of shadows ; development and intersection of surfaces ; wood carving, diaper, incised and relief.

PRACTICAL MECHANICS.

For those whose time and means are limited, a short course in practical mechanics is provided. This course covers, practically, the work of the Freshman and Sophomore classes.

The work has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades, or manufacture salable articles ; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of *how* a tool or machine should be used, and the *manner of laying out work* for it, are thoroughly taught.

Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by this training, and he will more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

MILITARY SCIENCE.

For instruction in Military Tactics, the students are formed into companies and the companies into an Infantry Battalion with proper Field and Staff.

The system of instruction, being that in use in the United States Army, is calculated to form the habit of prompt obedience, foster the natural martial instinct, and prepare the students, should necessity arise, to organize a company or battalion of our National militia.

The drill includes the School of the Soldier, company and battalion in close and extended order, a thorough course in position, sighting, and aiming exercises, competition with rifle at short ranges, and a series of lectures on castrametation and the art and science of war.

Instruction in Artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill, etc. For use in drill, the department has two three-inch rifled field pieces, from the Rock Island Arsenal, and one hundred and fifty cadet rifles, with accoutrements.

Military drill is required of each male student, unless excused for physical disability or by special vote of the Faculty for good and satisfactory reasons. Each cadet is required to purchase a copy of the standard United States Infantry Tactics, for study and reference. He is also to provide himself with a uniform, modeled somewhat after the uniform of the regular army. It is neat and durable, consists of blouse, pantaloons, cap, and gloves, and costs about twenty dollars.

In the Fall and Spring terms, a period of forty-five minutes daily is devoted to outdoor maneuvers. During the winter, the new armory is used and a portion of the time is devoted to recitations in tactics and to lectures.

When possible, an encampment will be held at the close of the Spring term for practical instruction in guard and field duty.

PHYSICS.

Instruction in Physics is given for three terms of the Sophomore and Junior years, the course lasting one complete college year. Laboratory work is carried on two hours daily for one and one-half terms. The important sciences of Mechanics, Light, Heat, Sound, and Electricity are studied. Special attention is given to the latter subject, both in the class-room and in the laboratory, in view of its increasingly important applications, and as a basis for Electrical Engineering. In the course in laboratory work, the student deals personally with the apparatus described in the text-book, performs experiments for himself, and carries on determinations of the physical constants, or experiments in such ways as will give training and knowledge and greater familiarity with the subjects studied.

The following is a selection from some of the laboratory exercises of the past year :

Exercises in exact measurement with micrometers and spherometers.

Exercises in weighing.

Investigation of the sensibility of the balance.

Testing the parallelogram of forces experimentally.

Determination of the acceleration of gravitation by the pendulum.

Investigation of the temperature correction of an aneroid barometer.

Comparison of therometers with standard ; testing boiling and melting points.

Measurement of heights by barometer.

Determination of difference of potential.

Construction of a working telephone.

Construction of a battery of one hundred dry cells.

Exercises in electric wiring.

Measurement of internal resistance of batteries.

Determination of battery E. M. F.

Measurement of wire resistance.

Electro-plating.

Determination of densities.

Measurement of candle-power of sources of light, with standard candles.

Determination of focal lengths of lenses and mirrors.

METEOROLOGY.

A six weeks' course is given to the members of the Senior class in the Fall term. This course includes a discussion of the means of taking observations; methods of exposure of instruments and precautions for taking correct observations; the characteristics of climate; barometry and thermometry; influence of the various meteorological elements upon agriculture and upon plant growth; the study of storm movements from the weather charts, etc. The College and the Meteorological Section of the Experiment Station possess a complete line of meteorological instruments, including self-recording thermometers, barometers, rain-gauges, sunshine recorders, psychrometers, etc. Their records, together with the daily charts of the Weather Bureau, are available for illustration and study in connection with the course.

SURVEYING.

The principles of Land Surveying are taught in the last term of the Sophomore year. This course is intended for all the young men, and includes the study of the methods of the United States land surveys; the location of Government corners; the surveying and platting of land; methods of leveling; and the use and adjustment of the necessary instruments. Work in the field is required for six weeks, and each student is required to make a survey and plat his work. There is

also given an elementary knowledge of the measurement of water, and the hydraulic laws relating thereto—such knowledge as is useful to every citizen of an irrigated country, and is expected of every surveyor. A more extended training in this line is given, in the later years of the course, to those who are taking the work in Irrigation Engineering.

AGRICULTURAL HYDRAULICS.

This course is intended to include a discussion of the general principles of irrigation as practiced in this and other countries; the different methods applied to grass and other crops; the laying out of grounds for irrigation; canals, flumes, reservoirs, etc.

The course is intended to be a general one, useful to those connected with agricultural work.

IRRIGATION ENGINEERING.

Those who desire to fit themselves for water commissioners, superintendents, canal superintendents, or who may desire to secure a basis for work as Irrigation or Civil Engineers, may enter the course in Irrigation Engineering in the last two years of the College course. It is the aim of the course to give as thorough groundwork as circumstances will allow in the theoretical and practical knowledge of hydraulics, and of engineering as applicable to the special circumstances of irrigation. The special instruction in Civil and Irrigation Engineering extends through the Junior and Senior years, and covers, principally in lectures, the principles in ditch and canal engineering; reservoir and reservoir construction; fluming; canal structures, as headgates, drops, syphons, etc., both in wood and masonry; theoretical and practical hydraulics; bridge-building, trusses, etc. The whole course is accompanied with instruction in draughting

and practice in field work sufficient in amount to make the student familiar with instruments and methods. Many of the students do practical work in the surveying of reservoirs, canal lines, gauging of streams, and other similar work. Where this work is approved, it is accepted in place of assigned exercises.

The Department has a good collection of engineering instruments, including transits, compasses, levels, leveling rods, etc. In the Hydraulic Laboratory are found a large tank and scales for measuring and experimenting on the flow of water over weirs and through orifices of various kinds; current meters of various patterns for stream gauging; water registers for studying the flow of water; water motors, etc. It is also provided with a Fairbanks Cement Tester for testing the strength of cement and a testing machine capable of making all tests up to a limit of 50,000 pounds.

There is also available, belonging to the Department and to the Professor of Engineering, collections of photographs and plans of engineering and irrigation structures in Colorado and other States of the Union, as well as in Spain, Italy, France, Algeria, Egypt, India, and Australia. In the present condition of Irrigation Engineering these collections are especially useful.

STRENGTH OF MATERIALS.

This subject occupies one term in the Senior year. It includes the theory of the resistance of materials; calculation of strength of beams, columns, etc. Merri-man's *Mechanics of Materials* is used as a text-book.

TRUSSES AND BRIDGES.

Instruction covers one term, and includes the methods of computing and determining graphically the stresses in trusses; the principles involved in the construction of trusses; their erection, designing, etc.

ORATORY.

Oratory has been defined as the "Art of influencing conduct with the truth sent home by all the resources of the living man."

The study of the Art of Expression is followed in some form throughout the College course. A healthful interest in the subject has been manifested by all the students.

Our public institutions, our form of popular government, great questions of moral and political moment, the almost boundless possibilities within the grasp of individual effort, all tend to increase and intensify the interest in, and to emphasize the importance of, this much-needed branch of education.

Few text-books are required in this branch, as copies of the best selections of English prose and verse are furnished the students. This gives a much broader range and scope to the study, and adds an interest to the work not otherwise attained.

Practical rhetorical work is given by the students before audiences every Friday evening. These entertainments are becoming quite popular and tend to encourage the students to faithful work.

PHYSICAL CULTURE

is a part of the work required of all lady students. Much interest has been aroused in the young ladies' classes, and much has been accomplished in grace in movement and ease of bearing, promptness, precision, and strength and vigor.

The plan of measurements now in practice in the very best colleges is followed.

Special physical exercises are marked out as the individual needs of each student require, and results are closely watched.

The College is now better equipped for this work than ever before.

PSYCHOLOGY.

Hill's Elements of Psychology is the text-book in use.

The subject is taught principally by recitations, discussions, and lectures. Much oral work is done in connection with recitations based upon the text. Supplementary reading along the lines of recent investigations is encouraged. Contributions to the science, found on the pages of the best periodicals, supplement the text-book statements. The lives and writings of representative thinkers in the domain of metaphysics afford interesting topics for much oral instruction and library investigation. Something is done to point out the sources whence a knowledge of the history of psychology can be obtained. The relations of the subject to the work of the teacher are pointed out and made themes for study and discussion.

LOGIC.

This study is taught by recitations, discussions, and original exercises. Careful consideration is given to the principles of deductive reasoning. The syllogism is analyzed. The principles and methods underlying scientific investigation are made subjects of study, and the basis of class discussion and essay work. Practical application of what the student learns in the study of Logic is made in testing the validity of arguments and detecting fallacious reasoning.

The history of the science is considered and something learned of the writers whose works thereon have recognized merit. Gregory's Practical Logic is the text-book used.

POLITICAL ECONOMY.

The text-book in use is Mill's Principles of Political Economy. Access is had to other standard works, such

as Walker's Science of Wealth, Bowen's American Political Economy, Perry's Elements of Political Economy, Gregory's Political Economy, and Andrews's Institutes of Economics.

The important questions with which the subject deals are treated without attempt to uphold any narrow, one-sided view. Economic questions of particular importance to the people of the United States are given special prominence in the recitations, discussions, and lectures. These are considered from a historic and an impartial standpoint.

CIVIL GOVERNMENT.

The study of the Constitution of the United States and that of the State of Colorado, is an important preparation for the duties of citizenship. An elementary text-book is used by the students in the Preparatory class. Later in the College course, a more thorough consideration of the subject is provided for.

PUBLIC RHETORICALS.

Each student enrolled has at least one public rhetorical exercise each College term, unless excused by Faculty vote. These exercises consist of declamations and recitations for the lower classes and original exercises for the advanced students. The importance of these exercises to the student can scarcely be over-estimated, as every one should have a training which will enable him to present his views upon any question in public in an intelligent and a pleasing manner.

DEGREES.

Upon those who complete the work of any one of the four courses in a satisfactory manner, The State Board of Agriculture, upon recommendation of the Faculty of Instruction, confers the degree of Bachelor of Science.

The degree of Master of Science will be conferred upon all graduates of the College who pursue thoroughly some line of work after graduation, and who submit an acceptable thesis.

The degrees of Civil Engineer and Mechanical Engineer will be conferred upon post-graduate students and others who, by reason of satisfactory work, are entitled to receive them.

THE STATE AGRICULTURAL EXPERIMENT STATION.

The Central Station is located at the College, Fort Collins, Colorado, Larimer County. Five Sub-Stations are provided for, four of which are in operation. They are the San Luis Valley Station, at Monte Vista, Rio Grande County; the Arkansas Valley Station, at Rocky Ford, Otero County; the Divide Station, at Table Rock, El Paso County; and the Rain-belt Station, at Cheyenne Wells, Cheyenne County. The fifth, to be in Delta County, has not yet been put in operation.

This department was created in acceptance of the conditions of the Hatch Act, and the work has been arranged in conformity with its provisions.

Bulletins are issued quarterly, or oftener, and reports annually, which are distributed to those who request them as long as the editions last.

THE LIBRARY.

The College Library was founded in 1878 by donations from members of the Faculty and interested citizens, aided by a small purchasing fund derived from the one-fifth mill tax. From this small beginning it has steadily grown in size, and now contains 4,315 bound volumes, and 7,000 pamphlets.

All the books have been selected with great care. The Library contains choice and valuable works on Agri-

culture; Irrigation, principally by English, French and Italian authors; Mathematics; Physics; Chemistry; Geology; Botany and Horticulture; Physiology; Zoology and Entomology; Mechanics and Engineering; Political Economy; Science of Education; Military Science; General History; English and American Literature; Translations of the Classics; Biography; Travels; etc., etc., etc.

On the shelves are found bound volumes of the following-named periodicals:

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| <i>Appleton's Journal.</i> | <i>Gardeners' Monthly.</i> |
| <i>Atlantic Monthly.</i> | <i>Garden and Forest.</i> |
| <i>American Naturalist.</i> | <i>Harper's Magazine.</i> |
| <i>American Journal of Science.</i> | <i>Journal of Chemical Medicine</i> |
| <i>American Agriculturist.</i> | <i>and Veterinary Surgery.</i> |
| <i>Agricultural Science.</i> | <i>Journal of the Franklin Institute.</i> |
| <i>American Journal of Forestry.</i> | <i>Journal of the Association of the</i> |
| <i>American Machinist.</i> | <i>Engineering Societies.</i> |
| <i>Anthony's Photographic Bulletin.</i> | <i>Journal of Science and Arts.</i> |
| <i>American Meteorological Journal.</i> | <i>Littell's Living Age.</i> |
| | <i>Nature.</i> |
| <i>American Bee Journal.</i> | <i>North American Review.</i> |
| <i>American Garden.</i> | <i>National Live Stock Journal.</i> |
| <i>American Architect.</i> | <i>Microscopical Journal.</i> |
| <i>Bulletin of the Tory Botanical Club.</i> | <i>Magazine of Horticulture.</i> |
| <i>Botanical Gazette.</i> | <i>Magazine of Western History.</i> |
| <i>Breeders' Gazette.</i> | <i>Mining Industry and Tradesman.</i> |
| <i>Cottage Gardener.</i> | <i>Popular Science Monthly.</i> |
| <i>Canadian Entomologist.</i> | <i>Princeton Review.</i> |
| <i>Chemical News.</i> | <i>Publishers' Weekly.</i> |
| <i>Country Gentleman.</i> | <i>Public Opinion.</i> |
| <i>Century Magazine.</i> | <i>Scribner's Magazine.</i> |
| <i>Contemporary Review.</i> | <i>Scientific Farmer.</i> |
| <i>Eclectic Magazine.</i> | <i>Scientific American and Supplement.</i> |
| <i>Educational Review.</i> | <i>The Microscope.</i> |
| <i>Electrical World.</i> | <i>The Horticulturist.</i> |
| <i>Engineering News.</i> | <i>The Forum.</i> |
| <i>Eclectic Engineering Magazine.</i> | <i>Wallace's Monthly.</i> |
| <i>Farmers' Advocate.</i> | <i>Zeitschrift für Analytische</i> |
| <i>Gardeners' Chronicle.</i> | <i>Chemie.</i> |

Current numbers of the following-named newspapers and periodicals can be found in the Library reading-room :

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| <i>American Architect.</i> | <i>Journal of Botany.</i> |
| <i>American Grange Bulletin.</i> | <i>Journal of Hygiene.</i> |
| <i>American Machinist.</i> | <i>Journal of Education.</i> |
| <i>American Agriculturist.</i> | <i>Journal of the Franklin Institute.</i> |
| <i>American Garden.</i> | <i>Journal of the Association of the En-</i> |
| <i>American Journal of Chemistry.</i> | <i>gineering Societies.</i> |
| <i>American Investments.</i> | <i>Journal of the American Economic</i> |
| <i>American Journal of Analytic Chem-</i> | <i>Association.</i> |
| <i>istry.</i> | <i>Journal of the Chemical Society.</i> |
| <i>American Naturalist.</i> | <i>Journal fur Landwirtschaft.</i> |
| <i>American Meteorological Journal.</i> | <i>Loveland Reporter.</i> |
| <i>American Microscopical Journal.</i> | <i>Live Stock Journal.</i> |
| <i>American Journal of Science.</i> | <i>Massachusetts Plowman.</i> |
| <i>Agricultural Science.</i> | <i>Mehan's Monthly.</i> |
| <i>Art Amateur.</i> | <i>Microscope.</i> |
| <i>Botanical Gazette.</i> | <i>Nature.</i> |
| <i>Board of Health Bulletin.</i> | <i>North American Review.</i> |
| <i>Bee Journal.</i> | <i>Naturalist's Monthly Bulletin.</i> |
| <i>Books.</i> | <i>Orange Judd Farmer.</i> |
| <i>Breeders' Gazette.</i> | <i>Proceedings of the Academy of Natural</i> |
| <i>Colorado Farmer.</i> | <i>Science.</i> |
| <i>Colorado Index.</i> | <i>Proceedings of the American Society of</i> |
| <i>Country Gentleman.</i> | <i>Civil Engineers.</i> |
| <i>Chemical Notes.</i> | <i>Proceedings of the Boston Society of</i> |
| <i>Century Magazine.</i> | <i>Natural History.</i> |
| <i>Cosmopolitan.</i> | <i>Popular Science Quarterly.</i> |
| <i>Contemporary Review.</i> | <i>Popular Science News.</i> |
| <i>Canadian Entomologist.</i> | <i>Physical Review.</i> |
| <i>Critic.</i> | <i>Power.</i> |
| <i>Current History.</i> | <i>Pacific Rural Press.</i> |
| <i>Die Gartenlaube.</i> | <i>Public Opinion.</i> |
| <i>Die Deutsche Botan. Monat.</i> | <i>Printer's Ink.</i> |
| <i>Denver Republican.</i> | <i>Popular Science Monthly.</i> |
| <i>Electrical World.</i> | <i>Pharmaceutical Era.</i> |
| <i>Engineering News.</i> | <i>Rural New Yorker.</i> |
| <i>Engineering Magazine.</i> | <i>Review General de Botanique.</i> |
| <i>Engineering Record.</i> | <i>Rocky Mountain News.</i> |
| <i>Fort Collins Courier.</i> | <i>Review of Reviews.</i> |
| <i>Fort Collins Express.</i> | <i>Scientific American and Supplement.</i> |
| <i>Field and Farm.</i> | <i>Safety Valve.</i> |
| <i>Farm and Home.</i> | <i>Scribner's Magazine.</i> |
| <i>Forum.</i> | <i>The Arena.</i> |
| <i>Garden and Forest.</i> | <i>The Analyst.</i> |
| <i>Gardeners' Chronicle.</i> | <i>The Entomologist.</i> |

<i>Greeley Tribune.</i>	<i>The Industrialist.</i>
<i>Greeley Sun.</i>	<i>The Ranch.</i>
<i>Good Housekeeping.</i>	<i>The Statesman.</i>
<i>Grand Valley Star.</i>	<i>The Dakota Farmer.</i>
<i>Good Health.</i>	<i>The Zoologist.</i>
<i>Harper's Magazine.</i>	<i>The Auk.</i>
<i>Harper's Weekly.</i>	<i>Wallace's Monthly.</i>
<i>Hoard's Dairyman.</i>	<i>West American Scientist.</i>
<i>International Journal of Ethics.</i>	<i>Zeitschrift.</i>
<i>Irrigation Age.</i>	<i>Zoe.</i>
<i>Journal of Morphology.</i>	

The Library is well-lighted and furnished. It is open from 8 a. m. to 5 p. m. on week days. Students have free access to the shelves. Books may be drawn for a period of two weeks. The Library is catalogued according to the Dewey Decimal system, the author-and-title catalogue being complete to date. A comprehensive subject catalogue is now being completed. The cards are neatly and legibly written, and systematically arranged in convenient and accessible cabinets.

LITERARY SOCIETIES.

There are two Literary Societies connected with the College—the “Philo-Esthesian” and “Columbian.” Students are admitted to these societies by vote of the members. The fees and dues are not burdensome.

CONDITIONS OF ADMISSION.

The College admits students of both sexes, provided they pass a satisfactory examination in the common branches, viz.: Reading, Writing, Spelling, Grammar, Arithmetic, and Geography; and provided they are at least 15 years of age.

The work of the Preparatory year is, in part, a thorough review of Grammar and Arithmetic, with the additional subjects of United States History, Civil Government, Physical Geography, Elocution, Composition, Word Analysis, and Drawing.

Candidates for admission should appear for examination on the dates announced on the calendar of exercises, preferably at the opening of the College year. Those entering later, or proposing to take advanced work, must be prepared to take a more thorough and prolonged series of examinations.

EXAMINATIONS FOR ENTRANCE.

Examinations for admission to the Freshman class are as follows:

In *Reading*, candidates must be able to read understandingly, and with proper accent and emphasis.

In *Writing* and *Orthography*, they must be able to write from dictation, sentences from standard pieces of English literature, both prose and poetry, sufficient in number to test their qualifications in Penmanship and Orthography.

Candidates will also be required to pass examinations in *Arithmetic*, *Grammar*, and *Descriptive Geography*.

Candidates for advanced classes or work must be examined on all previous work, or bring certificates of standing from schools having an equivalent grade of work.

Those desiring to enter the Preparatory class must show some knowledge of Grammar, and be examined in Arithmetic, as far as interest, and in Descriptive Geography. They must show a general knowledge sufficient to enable them to take up the work.

Specimen questions follow, so that candidates may gain an idea as to what will be required upon presenting themselves for entrance to the Freshman class.

Similarly thorough examinations will be made for admission to higher classes in all subjects completed by them:

SPELLING.

1. The *monument* is a *beautiful example* of the *severely simple taste* of the *period*.

2. A *triple canopy* rises over the *sculptured effigy* of the earl.

3. He rose through his *business capacities*.

4. A *diminutive altar tomb* in *alabaster* marks the spot.

5. She was *created countess* after the *attainder* and *execution* of her husband for *alleged treason*.

6. Its *stately* chapter house was the *cradle* of the *parliamentary government* of England and her colonies.

7. The state has six *electoral* votes.

8. The *Governor* is chosen *biennially*.

9. The *officers* are Governor, Council, Secretary of State, Treasurer, Attorney-General, Adjutant-General, and Superintendent of Schools.

10. The *merchandise* is *estimated* at *forty millions* a year, and its *manufactures* include *machinery*, *locomotives*, *carriages*, and other *articles*.

ARITHMETIC.

1. Explain reasons for "carrying" in addition and multiplication.

Subtract 21,376 from 22,142, and explain the process used in subtracting units, tens, and hundreds.

2. One acre contains 43,560 square feet. What decimal of an acre in a plat of ground 140 feet long and 125 feet wide?

3. (a) Define *per cent.*, *percentage*, *base*, *rate per cent.*

(b) When the percentage and base are given, how is the rate per cent. found? 256 is what per cent. of 3,240?

(c) 192 is 12 per cent. of what number?

(d) A merchant buys cloth at \$1.20 per yard. At what price shall he mark it so that he may "throw off" 10 per cent. of marked price and still gain $12\frac{1}{2}$ per cent. of the cost?

4. (a) Define *ratio*. What is the ratio of 16 to 2?
 - (b) Define *simple proportion* and *compound proportion*.
 - (c) A plat of ground 5 rods wide and 15 rods long yields 25 bushels of oats. At the same rate what would an acre yield?
 - (d) A reservoir 15 yards long and 4 feet deep holds 32,500 gallons. Find its capacity in barrels when the length has been increased 18 feet and the depth 1 foot, width remaining unchanged.
5. Find the expense of painting the walls and ceiling of a room 22 feet, 6 inches long, 13 feet, 6 inches wide, and 10 feet high, at 30 cents per square yard.

GEOGRAPHY.

1. Bound the States touching the Atlantic ocean.
2. Name and locate the capitals of the States included in the Mississippi basin.
3. Name and locate the colonial possessions of Great Britain.
4. Name three great railroad systems in the United States.
5. Define latitude and longitude.
6. Name and locate the largest mountain systems of the world.
7. Locate Kamtchatka, Arabia, Hindostan, Australia, and Gibraltar.
8. What States export large quantities of corn? cotton? rice? tobacco? wheat?
9. What are the leading imports of the United States?
10. Name the great republics of the world.

GRAMMAR.

1. What is language? What is grammar? What divisions are made of grammar? Define each.

2. What part of speech is each word in the following lines?

"She sat like patience on a monument,
Smiling at grief."

"To err is human."

3. What is a noun? What classes of common nouns? Define each and give examples.

4. What is an adjective? Define descriptive, definitive, participial, and pronominal adjectives and give example of each.

5. Parse the italicised words in the following:

"*He* is never *poor*
That little hath, *but* he that *much* desires."

6. What is a verb? Tell what properties belong to verbs, and define each. Define redundant, auxiliary, and impersonal verbs.

7. Analyze the following and parse the words in italics:

"Sleep is pain's easiest salve, and *doth* fulfil
All offices of death, *except* to kill."

8. Correct errors in the following: I said it was her setting there. We expected to have seen mary yesterday. Between you and I, that looks suspicious. He is not ready, i don't believe. He saw you and I laying down.

REGULAR AND SPECIAL COURSES.

Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well-qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, or will he be allowed to drop a study, unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee on Examinations, by mail or otherwise, at least two days before the

opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular courses.

LEAVING COLLEGE.

A student will not be allowed to leave College in term time without leave of absence granted by the President or the Faculty; otherwise the student will be liable to *suspension* or *expulsion*. Temporary leave of absence can be granted by the President, or the officer in charge during his absence. Final separation from the College must be acted upon by the Faculty.

LABOR.

Labor, two hours each school day, is required of all students not excused for physical disability. This labor (see Course of Study) is performed on the farm, or in the garden, in the shops and laboratories, in field work, in irrigation, and in surveying and engineering.

DISCIPLINE.

The discipline of the College is administered by the Faculty according to a system of demerits.

Misconduct, in or out of classes, unexcused absences from any required College exercises, meddling with College property, etc., receive one or more demerits, as the case may seem to require. Parents of students who receive ten demerits will be notified of the students' misconduct by the President; twelve demerits suspend, while fifteen expel the student from the College.

GRADES IN WORK AND STUDY.

Each student is expected to maintain a grade of 65, on a scale with 100 as perfect. A student is graded as

passed in any study, or branch of manual practice, when the average of his daily progress and his term examination equals 65, on a scale of 100 as perfect.

Failure may be made up, and tested by special examination, or the study must be again taken up with a subsequent class.

MEANS FOR INSTRUCTION AND ILLUSTRATION.

The College Hall, with its new addition, contains large recitation-rooms for the following-named departments: Mathematics, English and Stenography, History and Literature; also, commodious Library and reading-rooms, Museum, Zoological Laboratory and recitation-room, with work-room; also offices for officers of the College, rooms for Board of Agriculture, Faculty, etc. Finally, there is a large and well-arranged Assembly-room, with opera chairs, for seating 300 persons; stage, retiring-rooms, cloak-rooms, etc., attached, for the convenience and comfort of the school and the public. The whole is heated by steam and admirably lighted by electric lights. The basement is heated and lighted, and contains an Armory, 40 x 72 feet, for purposes of drill and gymnasium, the heating-plant, bath-rooms, rooms for janitor, storage, etc.

The Chemical Laboratory has a lecture-room for forty students; a work or analytic room, with desks for twenty-four students, each desk being supplied with water and gas for the use of each student, and convenient hoods for ventilation; and a Station Laboratory, with balance-room, distillation-room, etc.

The Botanical and Horticultural Laboratory, completed in May, 1890, has fine rooms for instruction and laboratory work, office, tool-room, seed-room, grafting-room, and ample basement room for storage. The conservatory attached, 20 x 50 feet, contains about 200 species,

or 1,000 plants, representing many interesting and rare botanical families, and is heated by improved hot-water apparatus.

The orchards and grounds are carefully laid out and planted to ornamental shrubs and trees. Here are the plantation of forest trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot-beds, and cold-frames.

The new Agricultural Hall is now completed. It is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for class-room work. The first floor is divided into a hallway and four large, comfortable rooms. Here are found the office of the Professor of Agriculture, laboratory, agricultural museum, and seed-room. The basement has four apartments which are used for heating apparatus and storage.

The farm of 240 acres, nearly all under cultivation, includes the experimental ground of about 20 acres, containing three plots, A, B, and C, the first consisting of fifty smaller plots, the second of thirty-three, ranging in size from 1-40 to 1-5 of an acre, and the third of sixteen, containing 1-4 acre each. All are permanently laid with drives and walks, and have iron stakes lettered and numbered to designate the corners. These permanent corner-stakes are four feet long, of which three and one-half feet are driven into the earth. In addition, there are several plots of one acre each, for larger experiments on the farm.

The live stock consists of Clydesdale grade draft horses, Short-Horn Durham cattle, and Berkshire hogs. Other representative breeds of stock will be added as rapidly as means and accommodations will admit.

The Mechanic Arts Hall includes a large main building two stories in height, and an ell portion one story high.

The machine-shop occupies the first floor in the north end of the building; it is supplied with a fine assortment of apparatus for working the metals. Around the room are benches, with iron vises fitted for the work in filing and chipping; and connected to the main-line shaft are the following high-grade machines: A Gray 6-foot planer, a Brown & Sharpe Universal milling machine, with gear-cutting attachments, a Gould & Eberhardt 15-inch shaper, a 14-inch and a 17-inch engine lathe, and a speed lathe, a Bickford 20-inch drill, a grind-stone, and an emery wheel. In addition, there is supplied a good assortment of gauges, reamers, taps, dies, and other small tools.

At the end of the machine-room is the office and the tool-room. In the tool-room are kept such tools as are not in general use, but which are necessary for special work, or such tools as would become injured or lost if scattered around. By an order, any tool in the tool-room can be obtained and used by the students. In the west end of the machine-room, a space is set off for experimental work in the testing of materials, valve-setting, testing by brakes, etc. This testing laboratory is supplied with a testing machine, a 12-horse power Hendey & Meyer engine fitted with a Prony brake, a Blake steam-pump, gauges, thermometers, indicators, etc.

Opening from the machine-room is the engine-room, which is separated from the hall by glass partitions. In this room is the 50-horse power Harris-Corliss engine for running the shops. This engine is supplied with indicator attachment, and the students are given a chance to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators with extra springs. A dead-weight gauge-tester affords a means of correcting steam-gauges.

Opposite the engine-room is the wash-room, with lockers for the use of one hundred students.

Adjoining the wash-room, is the boiler-room, containing the large boiler used to furnish the engines with steam and to heat the building.

The Department of Engineering and Physics occupies the building formerly known as the Dormitory, which has been fitted up for its use.

The main class-room is on the second floor. It has seats for a class of forty-six students. The windows are fitted with shutters, in order that the solar projection apparatus may be used for illustration of topics under instruction. The table is fitted with water-tank and pneumatic troughs. A second room on the same floor is used for storage of the instruments used in class instruction and as a museum of irrigation and engineering appliances. On the first floor are the offices, and the rooms for carrying on the work of the Section in the Experiment Station. There is also a draughting-room for the Engineering students.

The basement is taken up with the physical and the hydraulic laboratories, one-half of the area being used for each. In the physical laboratory are firm tables provided for the students, with place for each student, where the apparatus may be left from one day to another without disturbance. A concrete floor, to lessen injurious vibration, is used to make the room available for the use of delicate instruments.

The hydraulic laboratory has tanks and a large set of suspended scales, weighing 5,000 pounds, for testing the flow of water through orifices and over weirs. Here also is placed the Pelton water-motor and the cement-testing instrument, together with some other portions of the equipment, pipes, pressure-gauges, etc., for experi-

mentation. The experiments on measuring running water in streams are carried on in the adjacent streams.

In Physics, the Department has an excellent working equipment in all branches, the equipment having been selected for its usefulness, and for its adaptability to experimentation as well as for illustration. It includes a set of United States Standard Weights and Measures, prepared for the College under special act of Congress; micrometers; balances; spherometers; gauges; gyroscope; air-pump and accessories; thermometers; mirrors and lenses; projecting lantern; electrical machines; dynamo; batteries; standard B. A. ohm; Queen 100,000-ohm resistance coil; astatic, sine, tangent, and D'Arsonville galvanometers; Edelmann ohmmetre; quadrant; electrometer; voltmeters; telephones; standard cells; and much minor equipment.

For use in Engineering and Hydraulics, it has Colorado, Lallie and Fteley current meters, the latter with an electrical recording attachment; a Darcy-Pitot tube; registers to record the rise and fall of water, one imported from Paris to record, electrically, at a distance of some miles; large scales and tanks for experimentation on the flow of water through orifices and over weirs, and to study the laws of flow; pressure gauges; photographs and plans of hydraulic structures; and a collection of slides for the lantern made from negatives taken in this and other countries. A water-motor, presented to the Department by the Pelton Water Wheel Co., a water-meter, presented by the Equitable Meter Co., and a centrifugal pump add to the equipment.

In Engineering instruments, it has a Gurley and a Randolph compass; Foster, two Gurley, a Young and a Buff and Berger transits; five levels, including makes of Randolph, Gurley, dumpy and Y levels of Buff and Berger; plane table of Keuffel and Esser; leveling rods

of various patterns; chains and tapes for land surveying and for engineers' use; hand levels; planimeter for determining areas; apparatus for photographic surveying, odometer, etc.

A Fairbanks cement-tester, with full set of molds, gives the means of testing the strength of cements to 1,000 pounds per square inch. A large 50,000-pound testing-machine gives the opportunity to test other materials within its limits.

A complete set of meteorological instruments, many of them imported, is in daily use. This set includes barometers, thermometers, psychrometers, anemometers, statoscope, pluviometers, actinometers, solar and terrestrial thermometers, evaporation tanks, soil thermometers, etc.

The Military Department has one hundred and fifty cadet rifles and two 3-inch rifled field-pieces from the War Department. Each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice, and artillery firing.

The Scientific Department is supplied with a fine cabinet of specimens, illustrating Botany, Entomology, Geology and Mineralogy, Zoology, and Comparative Anatomy.

LOCATION.

The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural counties in the State. The town contains 2,700 inhabitants, and is beautifully situated about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its streets and buildings are finely lighted by an excellent electric light

plant; and its sidewalks are exclusively made of excellent flagstone, which is found in large quarries almost at its doors.

The College is at the south side of town; on either side of the Colorado Central Railroad are its buildings and the farm. Visitors are always welcome. They find the town accessible by four trains, which arrive daily from Denver and other points. With the advantages of pure water, a beautiful location, electric lights, and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

HISTORY.

The origin of The State Agricultural College of Colorado, like that of its sister institutions in other States, dates back to an act of Congress, passed July 2, 1862. Therein it is proposed to endow in the several States and Territories, by grants of public lands, "*a college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.*"

This act gave the College an endowment of 90,000 acres of land. From this source the College now receives an annual income of nearly \$7,000.

The Constitution of Colorado gives the College an independent existence and a permanent home in Fort Collins. Three citizens of the town donated to the State *two hundred and forty acres of land* whereon to erect the necessary buildings. In 1877, the Legislature provided for the support of the College by levying a tax of one-

tenth of a mill on all the taxable property of the State. At this time "The State Board of Agriculture" was created, and all matters pertaining to the management of the College were placed under its control. The one-tenth mill levy was increased, in 1879, to one-fifth of a mill. The present levy of one-sixth of a mill dates from an act of the Legislature passed in 1891. The corner-stone of the Main College Building was laid July 27, 1878. This building was completed and ready for occupancy early in the following year.

The Legislature, in addition to providing for the support of the College by the mill tax, before named, has made the following-named special appropriations:

YEAR.	AMOUNT.	FOR WHAT PURPOSE.
1881	\$ 5,000.....	College Dormitory.
1883	\$10,000.....	Mechanic Shop.
1889	\$18,000.....	Extension of Main Building.
1893	\$ 6,500.....	Sewer System.

The State Experiment Stations are intimately connected with the College, and are under the control of its governing board. These stations, five in number, owe their existence to the acceptance, by the State, of the provisions of the Congressional Act, better known as the "Hatch Act," of 1888. The College receives \$15,000 a year from the Treasury of the United States for the performance of the experimental work required of the stations.

The College also receives support from the General Government under the provisions of an Act of Congress, passed August 30, 1890, known as the "Morrill Bill." The first annual payment from this source was \$15,000. The act provides that this sum shall be increased \$1,000 yearly until it reaches \$25,000, when it shall become permanent.

The annual revenues of the College may be summarized as follows:

1. Land Income Fund, derived from interest on money received from sales of land donated by the General Government, and rents of leased lands not yet sold—\$7,000.

2. "Hatch Act," support of the United States Experiment Stations—\$15,000.

3. United States Fund, "Morrill Bill," in 1894—\$20,000. (This will ultimately reach \$25,000 per annum.)

4. Special Fund, derived from sale of stock, farm products, and the like (estimate based upon the average for four years)—\$1,500.

5. State Tax Fund, one-sixth mill on all the taxable property of the State—\$36,000.

Yearly receipts from all sources—\$79,500.

An inventory, taken in December, 1892, shows the value of the College buildings, grounds, and equipments to be \$187,847.53.

The Experiment Station property, under the control of The State Board of Agriculture, is valued at \$25,037.12.

Prior to 1887, but one course of study was pursued by students. Since that date the course has been uniform up to the close of the Sophomore year, and at that point has been differentiated. The following-named courses, from which students can make choice, all lead to the degree of Bachelor of Science: Agricultural Course, Mechanical Course, Irrigation Engineering Course, and Ladies' Course. There is also provision made for a "Short Course of Agriculture," but no degree is conferred upon those who complete it.

The enrollment of students and the number of graduates for each year since the opening of the College, are as follows:

ENROLLMENT.

YEARS.	MALES.	FEMALES.	TOTAL.	GRADUATES.
1880.....	14.....	11.....	25.....	0
1881.....	35.....	22.....	57.....	0
1882.....	49.....	32.....	81.....	0
1883.....	50.....	31.....	81.....	0
1884.....	40.....	37.....	77.....	3
1885.....	50.....	46.....	96.....	6
1886.....	45.....	42.....	87.....	1
1887.....	63.....	42.....	105.....	4
1888.....	71.....	38.....	109.....	4
1889.....	73.....	34.....	107.....	2
1890.....	56.....	18.....	74.....	9
1891.....	77.....	29.....	106.....	3
1892.....	101.....	45.....	146.....	9
1893.....	135.....	44.....	179.....	7
1894.....	142.....	56.....	198.....	7

All College fees were abolished in January, 1891. *Tuition in all the regular and special classes of the College is free.* There is no charge of any kind for material used in laboratory work or for books taken from the College Library.

A fair statement of the necessary expenses of a student for the College-year of forty weeks, is as follows:

Board, heat, light, and room-rent-----	\$160 00
Cadet uniform-----	21 00
Laundry expenses-----	20 00
Books, stationery, etc.-----	15 00
Total-----	\$216 00

Board in private families can be obtained at from \$3.50 to \$4 per week. Students who labor on the farm or in the garden receive from 5 cents to 15 cents per hour, according to the quantity and quality of the work performed.

The Library contains 4,315 books and 7,000 pamphlets, and is kept open throughout the year. The will

of Mrs. Anna Jones, deceased, gives the College authorities property, valued at \$5,000, which is to be sold and the proceeds used in the purchase of books for the Library.

The College now comprises the following-named departments: Agriculture; Botany and Horticulture; Chemistry and Geology; History and Literature; Mathematics; Mechanical Engineering and Drawing; Military Science; Physics and Irrigation Engineering; Zoology and Entomology; English and Stenography; Elocution and Calisthenics; Logic and Political Economy; Psychology and Civil Government; Civil Engineering; and the Experiment Station.

The work of the College is carried on in strict conformity with a section of the General Laws of the State, which reads as follows:

“The design of the institution is to afford thorough instruction in agriculture and the natural sciences connected therewith. To effect that object most completely, the institution shall combine physical with intellectual education, *and shall be a high seminary of learning*, in which the graduates of the common school, of both sexes, can commence, pursue, and finish a course, terminating in thorough theoretical and practical instruction in those sciences and arts which bear directly upon *agriculture and kindred industrial pursuits.*”

REPORT OF THE VISITING COMMITTEE.

To the Executive Committee of The State Board of Agriculture :

GENTLEMEN—The undersigned, members of a Committee appointed to examine the work of The State Agricultural College and the Experiment Station connected therewith, at Fort Collins, Colorado, met, with that object in view, January 4, 1894.

We believe that some date early in the fall would be a more suitable time to make observations about the College grounds and Experiment farm, and are glad to learn that it is proposed hereafter to set an earlier date for the Committee's visit.

The College grounds are conveniently adjacent to the city. The lawns are well arranged and well kept and the shrubbery and trees are both useful and ornamental. The architectural appearance of the buildings is very good. Altogether, the surroundings are such as to cultivate a taste for the beautiful in the minds of the students.

The buildings are heated by steam, lighted by electricity, and have connected with them the best possible sanitary arrangements. A sewer has recently been completed more than a mile in length. With this, all the buildings on the College grounds have been connected.

Taking into consideration that the State is not yet out of its "teens," the College is fairly well supplied with the necessary apparatus to illustrate the work going on in the different departments. The class-rooms are commodious, well-lighted, and furnished with the best of seats. We find the instruction given by the members of the Faculty to be of a highly practical and a very thorough character. The students are studious and orderly. We found the government to be all that could be desired.

The present corps of instructors could impart instruction to many more students than are now in attendance. To secure an increase of students, the greatest need is that of a dormitory of sufficient size to accommodate all the students who may attend from a distance. Thus the cost of board and lodging would be materially reduced and students would be brought more within the immediate control of the Faculty outside of recitation and work hours. It is believed, by the Committee, that dormitory accommodations of the right kind would be an additional inducement for parents to send their children to the College.

The Department of Horticulture and Botany stands greatly in need of a new building with greenhouse attachment. The building which contains the class-rooms and laboratories of the Chemical Department is in an unsafe condition and urgently calls for extensive repairs. The better plan, doubtless, would be to tear down the building and build a better and larger one.

A building, with all necessary appliances, in which Domestic Economy could be taught, is a pressing need. Such instruction would be of prime value to the rapidly increasing number of young lady students. We recommend that such a building be put up at the earliest practicable time.

We believe that more attention should be given to the feeding and management of some of the best breeds of dairy cattle and mutton sheep, with a view of determining the best methods of condensing farm products for market.

Owing to the growing interest in orchard planting, we commend to your favorable notice the field work in the Horticultural Department, to the end that practical illustrations be made of the effect of insecticides upon destructive insects.

The General Government has been liberal in its support of The State Agricultural College, but its financial support is given conditionally. The leading purpose kept in view, by the acts of Congress relating to the support of agricultural colleges, is to provide means for teaching "such branches of learning as are related to agriculture and the mechanic arts in such manner as the Legislatures of the States may respectively prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

In view of the fact that The State Agricultural College is well-equipped to meet the requirements set forth in the Congressional act before quoted, we deem it unwise and injudicious for the State to grant appropriations of money to other institutions to be used in duplicating departments of special instruction now in successful operation at Fort Collins.

We find all the departments of the College working in complete harmony, and believe that they are in better condition for effective work than ever before. The books and papers in the Secretary's office, as far as examined, are models of neatness and evince business ability. We further believe that The State Agricultural College is

worthy of the confidence and support of the people of Colorado, and that it should be liberally supported by State appropriations.

All of which is respectfully submitted,

JAMES F. ROBINSON,
Representing the State Grange.

N. C. ALFORD,
Representing the State Bee-Keepers' Association.

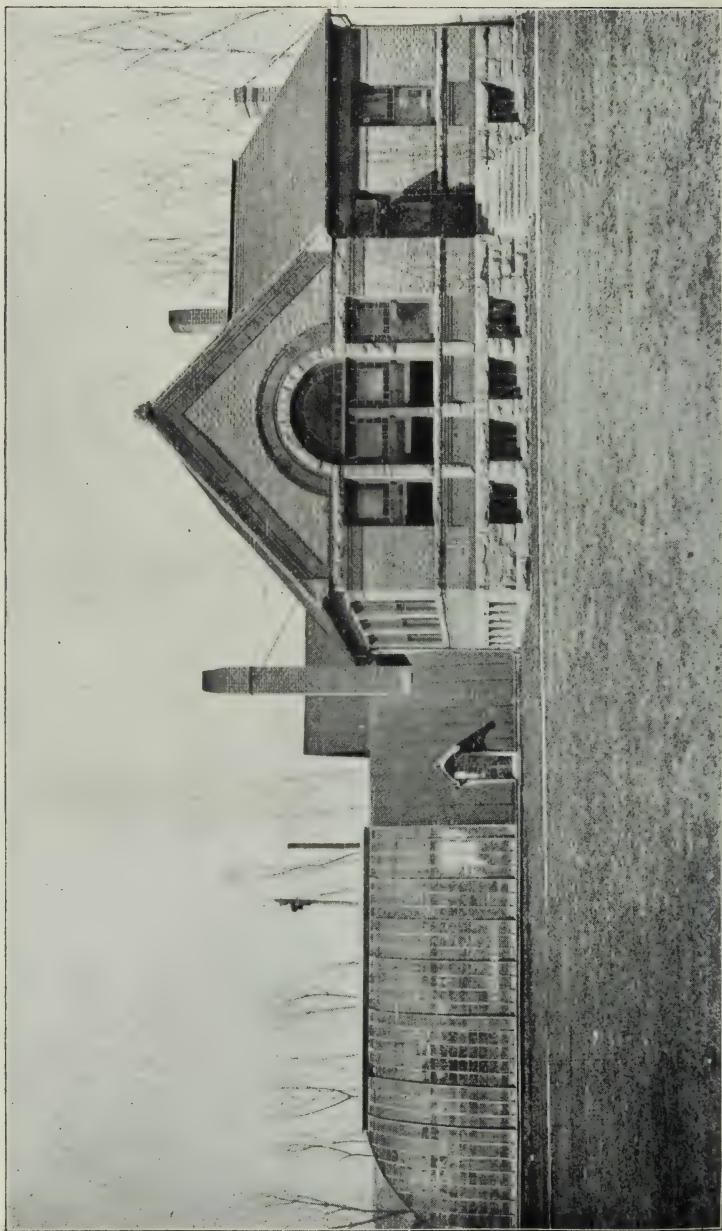
JOHN TOBIAS,
Secretary of the State Board of Horticulture.

FORT COLLINS, COLO., January 6, 1894.

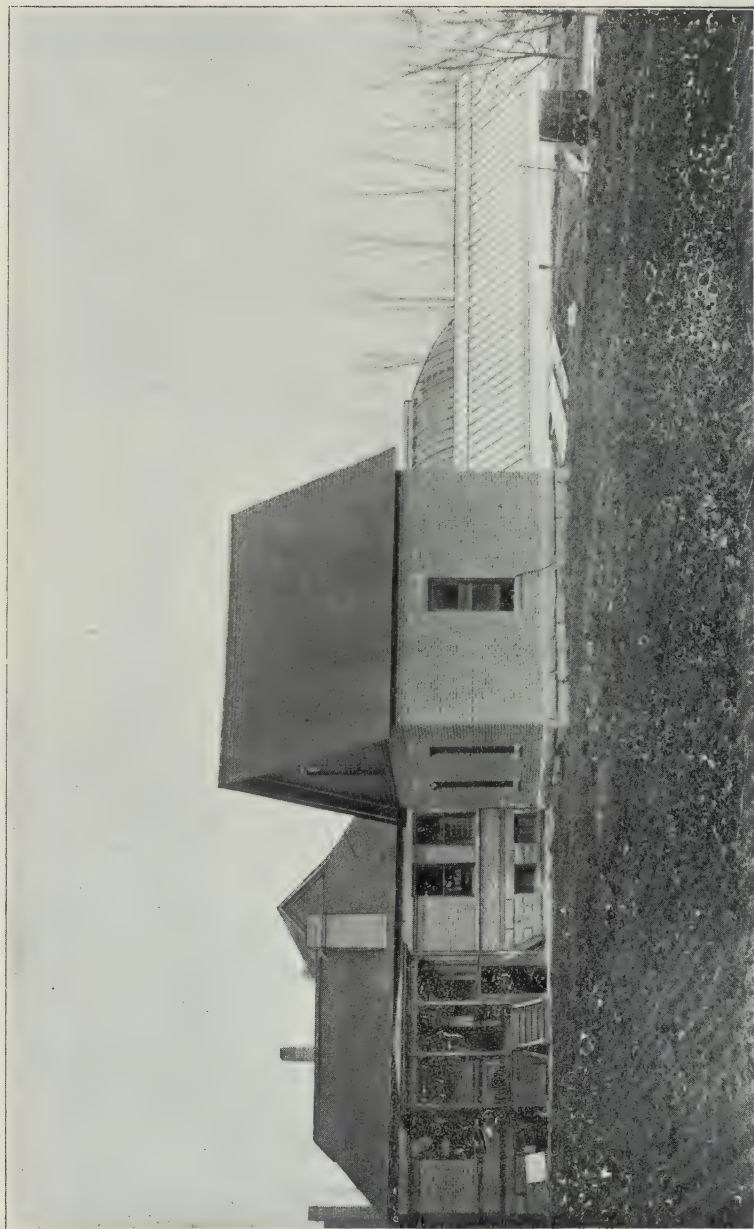
Calendar of Exercises.

1894-1895.

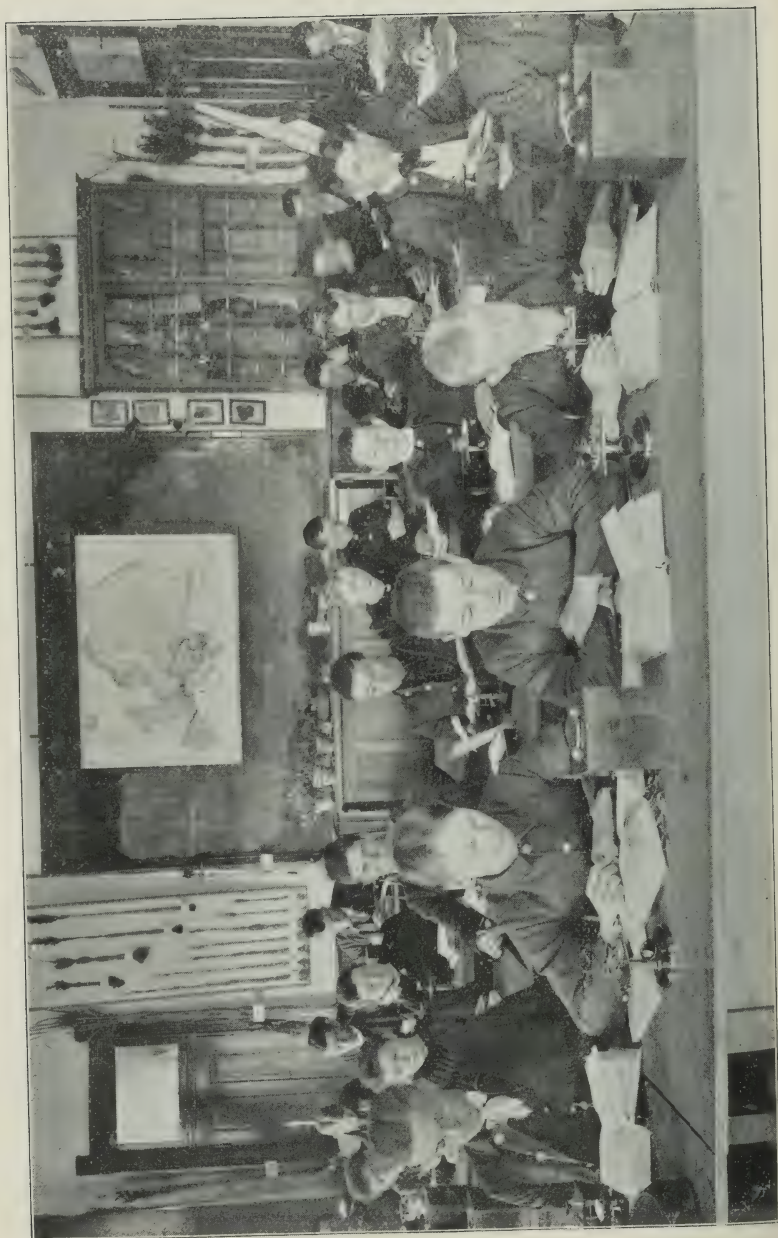
Entrance Examinations-----Monday, September 3, 1894
Fall Term begins-----Tuesday, September 4, 1894
Fall Term closes-----Friday, November 30, 1894
Winter Term begins-----Monday, December 3, 1894
Holiday Recess begins -----Friday, December 21, 1894
Holiday Recess closes -----Saturday, January 5, 1895
Winter Term closes-----Friday, March 15, 1895
Spring Term begins -----Monday, March 18, 1895
Baccalaureate Address-----Sunday, June 2, 1895
State Board of Agriculture meets- Wednesday, June 5, 1895
Commencement Exercises-----Thursday, June 6, 1895



HORTICULTURAL HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



FORCING HOUSE, HORTICULTURAL DEPARTMENT, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



CLASS IN BOTANY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

the general theory of the science, its history and development. In this course of lectures are discussed the subjects of acids, bases and salts, and the principles of chemical philosophy. The natural history, chemical and physical properties of each of the elements are discussed in detail, the whole being illustrated by experiments. While taking this course, the student spends two hours each day in the chemical laboratory, repeating the experiments shown in the class-room, and making others which may be suggested, thus familiarizing him with the various forms of compounds, the marked distinctions between the different classes of salts, the use of chemical nomenclature and the manipulation of apparatus. Practice in the use of the blow-pipe accompanies this work, and an insight into determinative mineralogy is thus acquired. The use and application of the spectroscope are also taught. The students in the laboratory, at the end of the first term, are examined in the text-book (O'Brine's Laboratory Guide) and by analysis of *unknown bodies* in the dry way.

In the second term of the Junior year, the Inorganic Chemistry is finished and Organic Chemistry is taken up. The laboratory work continues four-fifths of the term, and the student takes up the tests for the bases and their separation; also, the tests for the acids and their separation. The students are examined at the close of the second term by means of unknown bodies, composed of mixtures of the several groups of bases.

In the third term of the Junior year the class completes Organic Chemistry, with some practice in Chemical Physics and Stoichiometry. In the laboratory, the separation of the bases and acids is reviewed, tests for the poisons are made, their separation from organic mixtures is worked out, and the analysis of organic compounds is carried on.

In the Agricultural course, in the second and third terms of the Junior year, the students listen to a course of

lectures upon Agricultural Chemistry, in which are discussed such subjects as the following: Relation of Chemistry to Agriculture, the literature of Agricultural Chemistry, elements of plant growth, their relative abundance and importance, the atmosphere, the soil, fertilizers, etc. Storer's Agriculture, Johnson's "How Crops Grow" and "How Crops Feed" are used as reference books. Laboratory work accompanies the lectures and work in the text-books. The study of quantitative analysis begins in the gravimetric way, and, after some little practice, students will be directed in any line of special work they may desire.

In the third term of the Senior year of the Mechanical course, the students study the chemistry of alloys, iron, steel, and fuel, and in the laboratory they are taught the analysis of these bodies, including furnace gases. Students have the use of all the apparatus described in Winkler and Lunge's "Technical Gas Analysis."

Students who desire it, will have an opportunity to see, in the Station laboratory, the analysis of food, blood, poisons, urine, water, coal, minerals, soils; also, assaying and gas analysis. Keeping in mind the object for which our College is founded, we have so planned our Chemical course as to prepare the student for the general application of Chemistry to the industrial arts, while seeking thoroughly to ground him in the application of science to agriculture. A chemical laboratory, fitted up with modern appliances, balance-room, foul-gas room, and desks for thirty-six students, is ready for the classes.

As a part of quantitative analysis, assaying is taught in the Winter term of the Senior year. The College has a complete outfit to illustrate the crucible and scorification processes. Brown's Manual of Assaying is used as a text-book, and Rickett's and Bodeman and Kerl's are used as reference books. Gas analysis is taught in the Spring term of the Senior year. Technical Gas Analysis,



STATION LABORATORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



CHEMICAL LABORATORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

by Winkler and Lunge, is used as a text-book. A room, in the basement, has been fitted up with special reference to this work, and all the apparatus described in their work has been obtained for the use of the students. Hempel's Gas Analysis is used as a reference book. Of the simpler forms of gas apparatus, Elliott's and Mackintosh's are also accessible to the students. The late edition of Wagner's Chemical Technology is used in this subject. Remsen's Organic Chemistry is used in Organic Chemistry, and Norton's Chemistry in general Chemistry. Johnson's Chemistry of Common Life is used in the Ladies' Course for the last term of the work. In blow-pipe work, Endlich's Manual of Qualitative Blow-pipe Analysis is used as a text-book. In the analysis of agricultural substances, the method adopted by the Association of Official Agricultural Chemists is used. In Chemical Physics, the works of Cooke, Miller, Tilden, and Pyncheon are used as references.

Students have access to the following current chemical literature: *Chemical News*, *Analyst*, *Journal of the Chemical Society*, *Journal für Landwirtschaft*, *Journal of Analytic Chemistry*, and a complete set of "Fresenius Zeitschrift für Analyt. Chemie."; also, the following works of reference: Watt's Dictionary of Chemistry, the works of Roscoe, Schorlemmer, Bloxam, Tidy, Miller, Stricker, Pinney, Fowne, Wagner; in analysis, the works of Fresenius, Wills, Classen, Prescott, Thorpe, Wohler, Cooke's Select Methods, Allen's Organic Analysis, Hart, Sutton, Blythe, etc. A three-horse power water-motor is used to run an exhaust fan to ventilate the laboratory and to do other work.

GEOLOGY.

Recognizing the fact that Chemistry and Geology are the foundations of agricultural science, the subject of Geology receives corresponding attention. The second term of the Junior year, Le Conte's Elements of Geology

is taken up and continued during the year. The students work two hours, three days per week, in the laboratory. Lectures on Economic Geology are also given, William's Manual being the guide. Frequent visits to the mountains and quarries illustrate the practical application of dip, strike, fault, formations, stratifications, and elevations by barometer, thermometer, and level, whenever field work is practicable. At the end of the third term the students are required to identify and describe twenty-five rocks or mineral specimens.

The following works of reference are accessible to the students: Croll, Bischof, Lyell, Dana, Nicholson, Geikie, Van Cotta, Platner, Brush, Elderhorst, and the geological reports of other States. Contributions to this department will be thankfully received and due credit will be given.

HISTORY, LITERATURE, AND LANGUAGE.

HISTORY AND LITERATURE.

No education is well rounded without a fair knowledge of History and English Literature.

Excellent opportunities are furnished for the study of these subjects throughout almost the entire course.

United States History, as studied during the greater part of the Preparatory year, takes up the subject with considerable thoroughness, and includes some work in American Literature.

Throughout the whole of the Freshman year, Sheldon's General History is used as a text-book. The most advanced methods are employed. The student is taught to reason about historical events and is required to consult books of reference.

Kellogg's Literature is begun when the class has reached the subject of English History. Thus each historic period and the authors of that period may be considered together. The class-work is supplemented by lectures.



CLASS IN HISTORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

During the last two terms of the Sophomore year, members of the Ladies' Course engage in a more extended study of English and American Literature, including critical readings from selected authors, and special attention to the writings of the five greatest English poets. Every effort is made to promote a taste for the best literature.

During the last term of the Junior year, the Recent History of America is studied by members of the Ladies' Course.

In the Senior year, one term is devoted to the Philosophy of History, and includes such subjects as—our historical resources; laws governing human actions; influence of physical laws over society and human character; influence of religion, literature, and government; development of historical literature; and causes of progress in civilization.

One term of the Senior year is devoted to study of the Recent History of Europe, and eight hours a week are given, by the young ladies, to special reading and investigation in the historical subjects which are pursued during two terms of the Senior year.

A valuable collection of photographs belongs to this department, and adds greatly to the interest of its historical work.

The College Library also affords substantial help. Its shelves are well filled with standard literature and with the works of the best historians.

GERMAN.

German is studied during the Junior and Senior years. The great increase of the German population in America during the last thirty years has made a practical knowledge of the German language a business commodity, as well as an elegant accomplishment. A course of two years in German is not sufficient to give a mastery of the language, but the limited time of study is occupied in giv-

ing, as far as possible, power to converse in every-day life. The recitations are conducted in the language studied, and much stress is placed on the ability to converse, as the most certain way to read and use German effectively. It is thought that the study of some language besides our own is of great assistance to the student as a means of mental growth. During the Junior year, Worman's First and Second German books are used, and Andersen's Selected Fairy Tales is used as a basis for conversation. During the last year, the time is equally divided between technical and literary German. A play from Schiller and a selection from Faust are read, with practice in reading at sight, and the study of some German scientific work is pursued. The German periodical, *Die Gartenlaube*, is placed in the library for the benefit of those students who are studying German.

ENGLISH AND STENOGRAPHY.

ENGLISH.

The study of English Analysis is pursued during the Fall and Winter terms of the Preparatory course, followed by Word Analysis during the Spring term.

Composition is taught throughout the Preparatory year, the subjects of punctuation, capitalization, structure, and arrangement of sentences, and the fundamental principles of style receiving special attention.

During the Fall term of the Freshman year, the subject of Composition and Rhetoric is continued, with Lockwood's Lessons in English for a text-book. It is the object of this work to enable the student to acquire skill in the logical arrangement of his thoughts, and to express them in a clear and effective manner.

Advanced work in Rhetoric is required of the Sophomore class during the Winter term. The laws of mind

and language as related to effected discourse, is a subject which receives special consideration.

Composition writing—essays, orations, etc.,—forms an important feature of the entire course in English.

STENOGRAPHY.

Stenography and Typewriting occupy a prominent place in the Ladies' Course.

The object of the work in these branches is to impress upon the mind of the student the importance of a knowledge of the English language and a correct use of the same in business life, as well as to enable him to become an efficient stenographer and typewriter.

A practical course in book-keeping is given in the Fall term of the Sophomore year.

MATHEMATICS.

The purpose of the instruction offered by this Department is two-fold: First, to give the student clear and exact ideas of magnitudes and their measurement, the principles underlying the methods used, and the general unity pervading the mathematical sciences, or such of them as he has time to become acquainted with; second, to give him such skill in computation as to enable him to handle easily and satisfactorily the practical problems he is likely to encounter in his after life.

The subjects offered are as follows:

ARITHMETIC

is taught the students of the Preparatory class. The year's work is designed to give a thorough review of the principles underlying the fundamental operations, and to give skill in the application of these to the various problems of business arithmetic.

ALGEBRA

is begun in the first term of the Freshman year. The first term's work is designed to give the student as clear

ideas as possible of the extensions introduced into the fundamental operations of arithmetic by the notion of two sorts of quantities directly opposed in character, and of the conciseness obtained by the use of literal notation; and to give him sufficient skill in the fundamental operations of Algebra to enable him to solve intelligently simple equations involving one unknown number. Subsequent work acquaints him with the solution of simple equations of several unknown numbers, with involution, evolution, radicals, quadratic equations, and as much more as may be possible in the time allowed to the subject.

GEOMETRY

is taken up as soon as the student is sufficiently acquainted with algebraic methods to apply them intelligently to the computations of this subject. In the two terms allotted to the study it is designed to give the student thorough practice in formal proof by the syllogistic method, to show him the dependence of the entire subject upon the few axioms and elementary concepts derived directly from experience, and to give him thorough practice in the mensuration of geometric magnitudes. So far as the time and ability of the student will permit, he is practiced upon original exercises.

TRIGONOMETRY

is taught in the first part of the Sophomore year. In the time allotted to this branch, the student is given clear ideas of the trigonometrical concepts, shown their connection, and given considerable practice in the practical applications of this branch of Mathematics.

DESCRIPTIVE GEOMETRY

is taught to those students electing the two courses in Engineering. The second and third terms of the Sophomore year are devoted to this subject. The principles of parallel

and central projection, of development, etc., are discussed and illustrated in the solution of a great variety of problems, and many of these are accurately worked out on the draughting-board by each student.

From the wide application of Mathematics in all branches of Engineering, those students electing either of the courses having to do with Engineering, pursue the study of Mathematics throughout the entire course, with the exception of the last two terms of the Senior year.

The first term of the Junior year is devoted to a brief review of quadratics and radicals, and to the study of the principal algebraic methods usually denoted by the name Higher Algebra. Among the subjects considered are: Series of various sorts; Mathematical Induction and some of its applications, such as the demonstration of the Binomial Formula; the method of approximating to the value of a continued fraction, etc.; the Theory of Equations; and various methods of solution of equations of the third and higher degrees.

The second term of the Junior year is devoted to the study of Analytic Geometry. The student is made acquainted with the method of co-ordinates, and the connection between algebraic and geometric forms. The fundamental properties of the conic sections are developed, and as much more of the subject as the time permits.

The last term of the Junior and the first term of the Senior years are devoted to the study of Differential and Integral Calculus. Taylor's Calculus is used as a text-book, and the study is pursued substantially as the subject is there developed. The notion of limits is, however, made the logical basis upon which the subject is developed.

The department is provided with a set of Schroeder models from Darmstadt, for purposes of illustration in the study of Solid Geometry, and with models of warped surfaces, etc. The collection is being added to from time

to time. The making of a collection of drawings for use in the study of curves and curve-tracing is under way.

PRACTICAL MECHANICS.

This department has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades, or manufacture salable articles; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of *how* a tool or machine should be used, and the *manner of laying out work* for it, are thoroughly taught.

Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by this training, and he will more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

The shop instruction is divided into courses as follows, and in each course will be given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.:

COURSE OF LABOR.

Bench work in wood-----	13 weeks
Wood turning-----	12 "
Pattern making-----	12 "
Molding and casting-----	12 "
Iron and steel forging-----	13 "
Machine work in metals-----	12 "
Vise work in metals-----	12 "

BENCH WORK IN WOOD.

This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First—The use of planes in joining, smoothing and getting the piece out of wind, lining off and the use of saws in cutting across and with the grain, and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle.

MACHINE WORK IN WOOD.

In connection with this course, with the use of tools, will be given the most rapid and economical method of selecting and preparing the wood for the machine. There will be given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools; examples in chuck work in separate and combined pieces; how to turn a ball.

PATTERN MAKING AND FOUNDRY WORK.

After becoming familiar with bench and machine work in wood, an application of both is made, by con-

structing patterns with due regard to shrinkage, draft, and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There will be given examples of plain work ; core work ; pulley work ; pipe work ; gear work ; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry-room by the students, where molds and cores are made, and castings are made in iron or brass.

In the foundry the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

MACHINE WORK IN METAL.

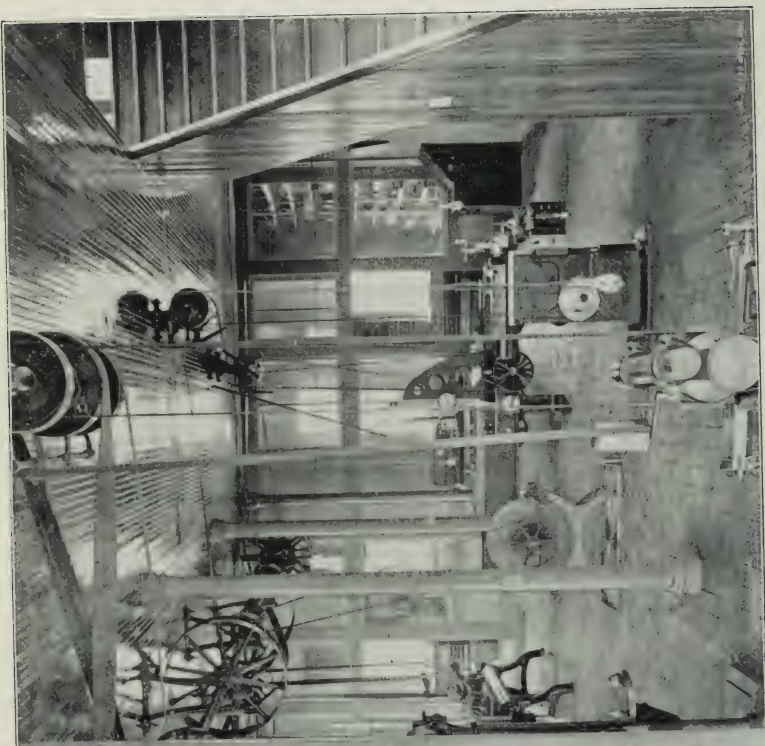
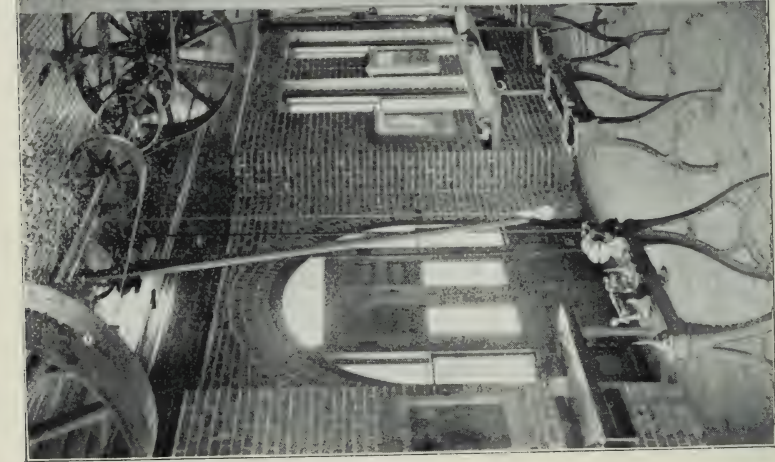
The care and management of the tools, their construction, etc.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals. Centering and straightening work ; straight turning and squaring ; boring ; making and fitting joints ; chuck work ; screw cutting, inside and outside ; drilling, tapping, and reaming ; boring with boring-bar and use of center rest ; polishing and finishing ; hand-tool work.

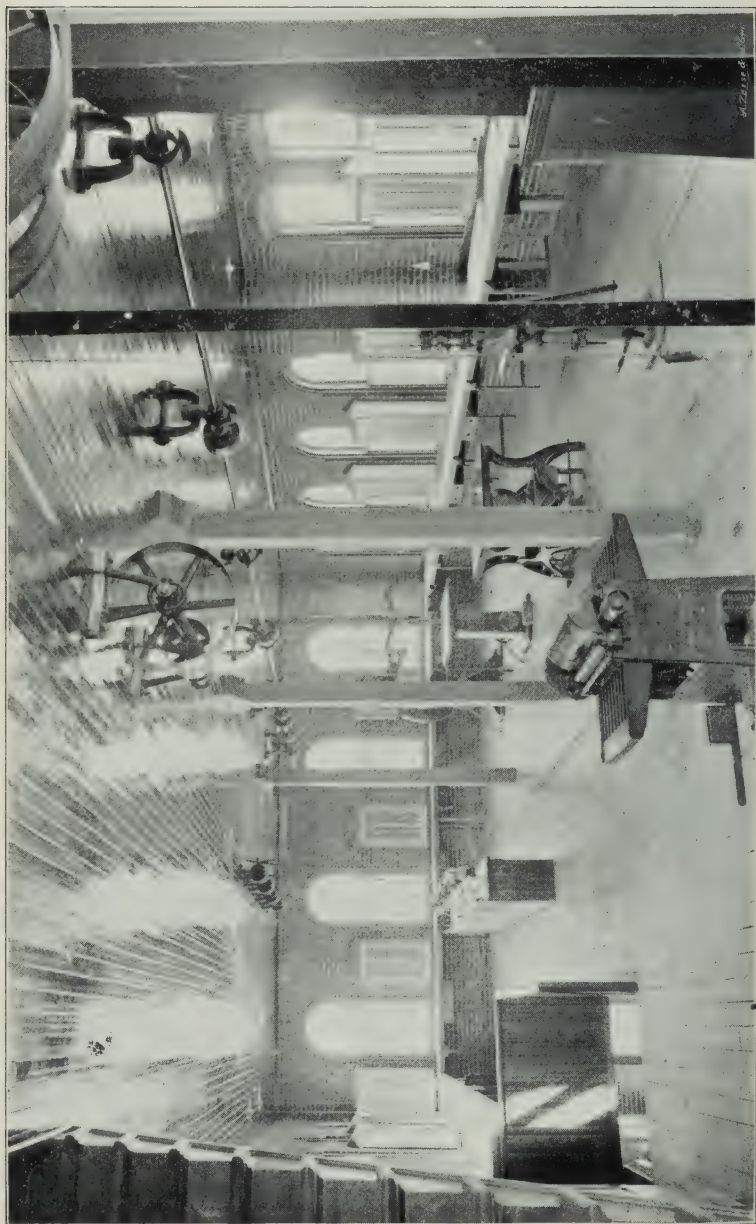
DRAWING.

Free-hand copy and dictation ; free-hand model and object drawing ; light and shade ; geometric problems ; orthographic and isometric projections and projection of shadows ; development and intersection of surfaces ; wood carving, diaper, incised and relief.

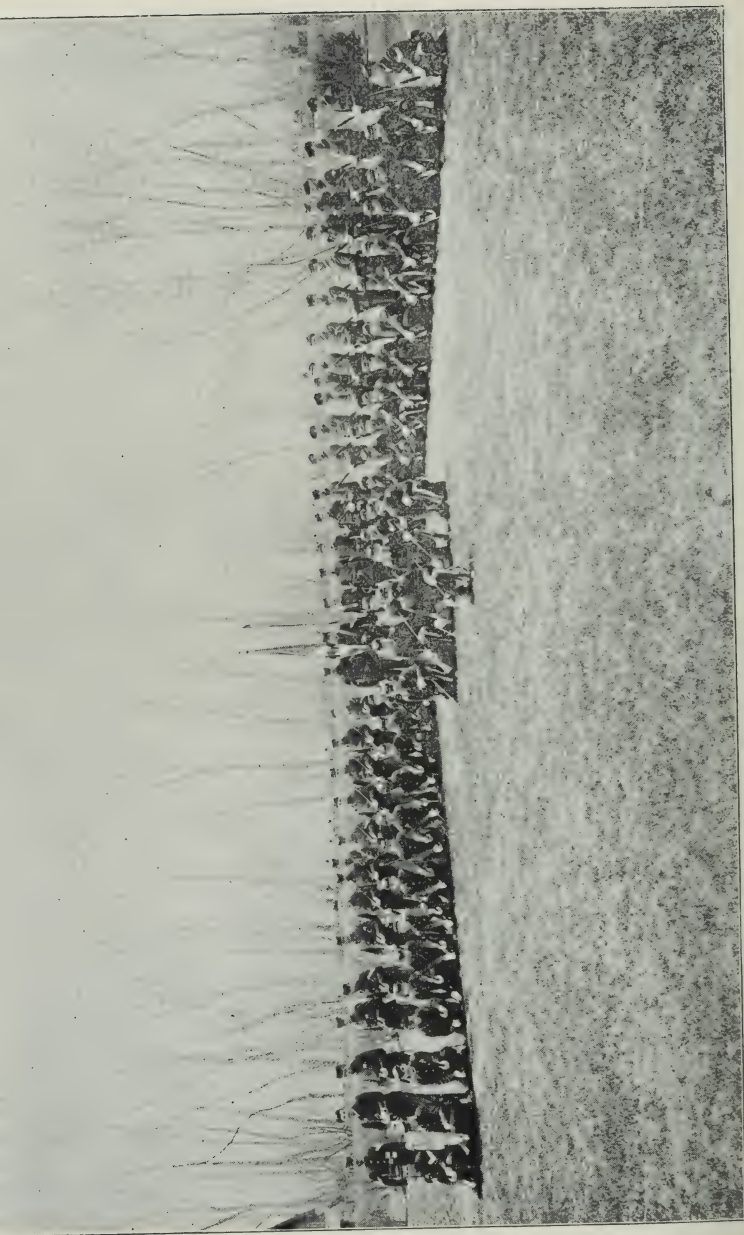
Persons having parts of machines, patterns, small models, or working drawings, may, if they choose, donate the same to the department, and thereby will confer a



MACHINE ROOM. MECHANICAL DEPARTMENT, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



WOOD-WORKING ROOM, MECHANICAL DEPARTMENT, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



MILITARY COMPANIES, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

great favor upon the College, and especially upon the department.

MILITARY SCIENCE.

For instruction in Military Tactics, the students are formed into companies. The system of instruction, being that in use in the United States Army, is calculated to form the habit of prompt obedience, foster the natural martial instinct, and prepare the students, should necessity arise, to organize a company or battalion of our National militia.

The drill includes the school of the soldier, company and battalion, in Infantry Tactics, supplemented by lectures on the art and science of war.

Instruction in Artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill, etc. For use in drill, the department has two three-inch rifled field pieces, from the Rock Island Arsenal, and one hundred and fifty cadet rifles, with accoutrements.

Military drill is required of each male student, unless excused for physical disability or by special vote of the Faculty for good and satisfactory reasons. Each cadet is required to purchase a copy of the standard United States Infantry Tactics, for study and reference. He is also to provide himself with a uniform, modeled somewhat after the uniform of the regular army. It is neat and durable, consists of blouse, pantaloons, cap, and gloves, and costs about twenty dollars.

In the Fall and Spring terms, a period of forty-five minutes daily is devoted to outdoor maneuvers. During the winter, the new armory is used, and a portion of the time is devoted to recitations in tactics and to lectures. When possible, an encampment will be held at the close

of the Spring term for practical instruction in guard and field duty.

PHYSICS.

Instruction in Physics is given by text-book, supplemented by lectures and outside reading where necessary. The study continues for three terms in the Sophomore and Junior years, and takes up the important sciences of Mechanics, Heat, Light, Sound, and Electricity, especial attention being given to the latter in view of its modern applications. In connection with the class-room work, is carried on a course in laboratory work, lasting for four and one-half months, two hours daily. This course is intended to give the student training by dealing personally with the phenomena studied in the class-room; learning methods of experimentation; reducing observations; and determining some of the physical constants.

The department possesses a good collection of working apparatus, including copies of the official standards of length, weight, mass, and electricity. By access to the principal works of reference, the student has the opportunity to make the course a profitable one.

METEOROLOGY.

A six weeks' course of lectures is given to the members of the Senior class in the Fall term. The course includes a discussion of the means of taking observations; methods of exposure and precautions for taking correct observations; the laws of storms; barometry; the characteristics of climate; influence of the various elements upon agriculture; the study of storm movements from the weather charts, etc. The collection of records at the College, the self-recording meteorological instruments, and a series of current weather-charts, give abundant means for illustrating the course.

SURVEYING.

In surveying, in the last term of the Sophomore year, are taught the theory, use, and adjustments of the instruments used in surveying; the methods governing the United States surveys; the location of lost corners; leveling; field work; and mapping. For one-half the term the class has practical work in the field in the use of instruments and the methods of work. There is also given some elementary knowledge of the measurement of water and the laws governing its flow, such as is useful to every citizen of an irrigated country and is expected of every surveyor.

AGRICULTURAL HYDRAULICS.

This course is intended to include a discussion of the general principles of irrigation as practiced in this and other countries; the different methods applied to cultivated and grass crops; the laying out of grounds for irrigation, canals, flumes, reservoirs, etc.

The course is a general one, covering the methods and principles of irrigation, and is useful to those directly connected with agricultural work.

The course as given in the second year of the short course in Agriculture, and in the Winter course, will be essentially the same, with such modifications as may be necessary because of the special purpose of the course and the preparation of the students entering it.

IRRIGATION ENGINEERING.

Those who desire to fit themselves for water commissioners, superintendents, canal superintendents, or who may desire to secure a basis for work as Irrigation Engineers, may enter the course of Irrigation Engineering in the last two years of the College course. It is the object of the course to give the student as thorough ground-work as circumstances will allow in the theoretical and practical

knowledge of hydraulics, and of engineering as applicable to the special circumstances of irrigation. The special instruction in Civil and Irrigation Engineering extends through the Junior and Senior years, and covers by a course of instruction, principally in lectures, the principles of ditch and canal engineering; reservoir and reservoir construction; fluming; canal structures, as headgates, drops, siphons, etc.; theoretical and practical hydraulics; bridge building; trusses, etc. The whole course is accompanied with field work sufficient in amount to make the student familiar with the instruments and their use. Many of the students do practical work in the surveying of reservoirs, canal lines, gauging of streams, and other similar work. Where this work is approved by the Professor of Engineering, it is accepted in place of assigned exercises.

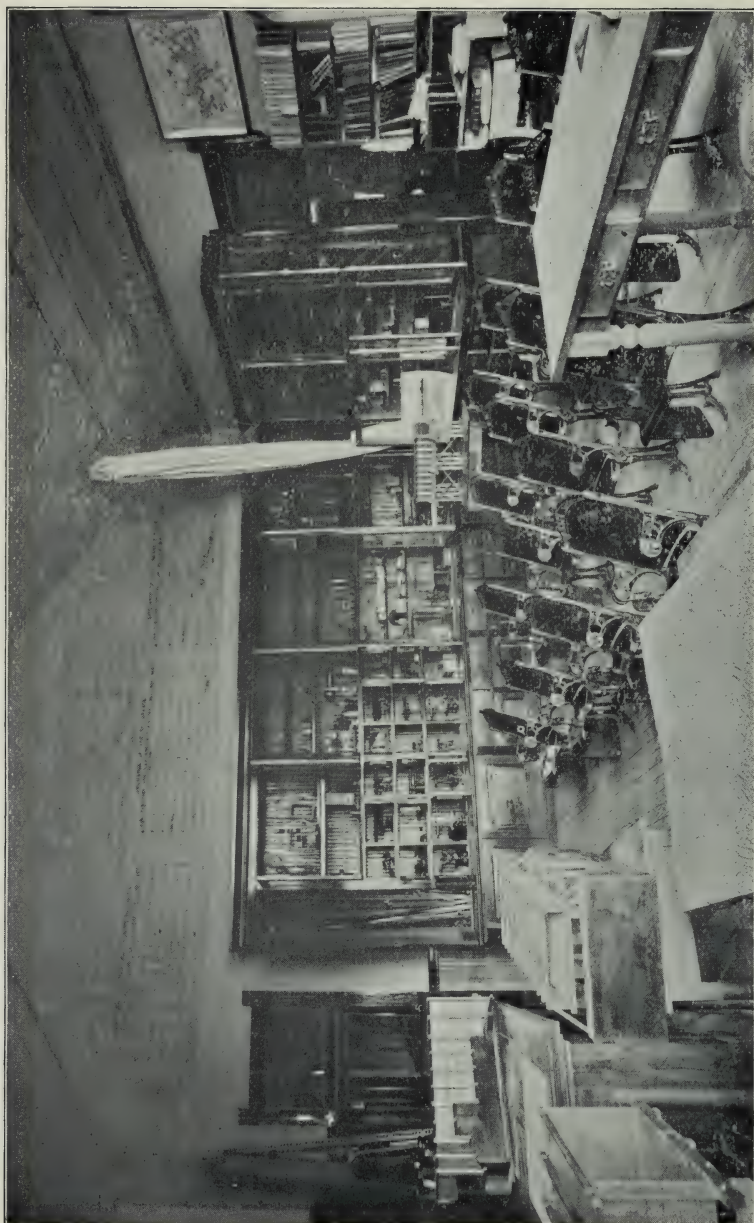
The department has accessible in its own collection, and that of the Professor of Engineering, photographs and plans of irrigation structures of this and other countries. In the present condition of Irrigation Engineering, and the lack of suitable text-books, the collection is especially useful.

There is also accessible to the students one of the most complete collections in the United States of works on Irrigation and Irrigation Engineering, covering American, French, Italian, Egyptian, Spanish, and Australian practice.

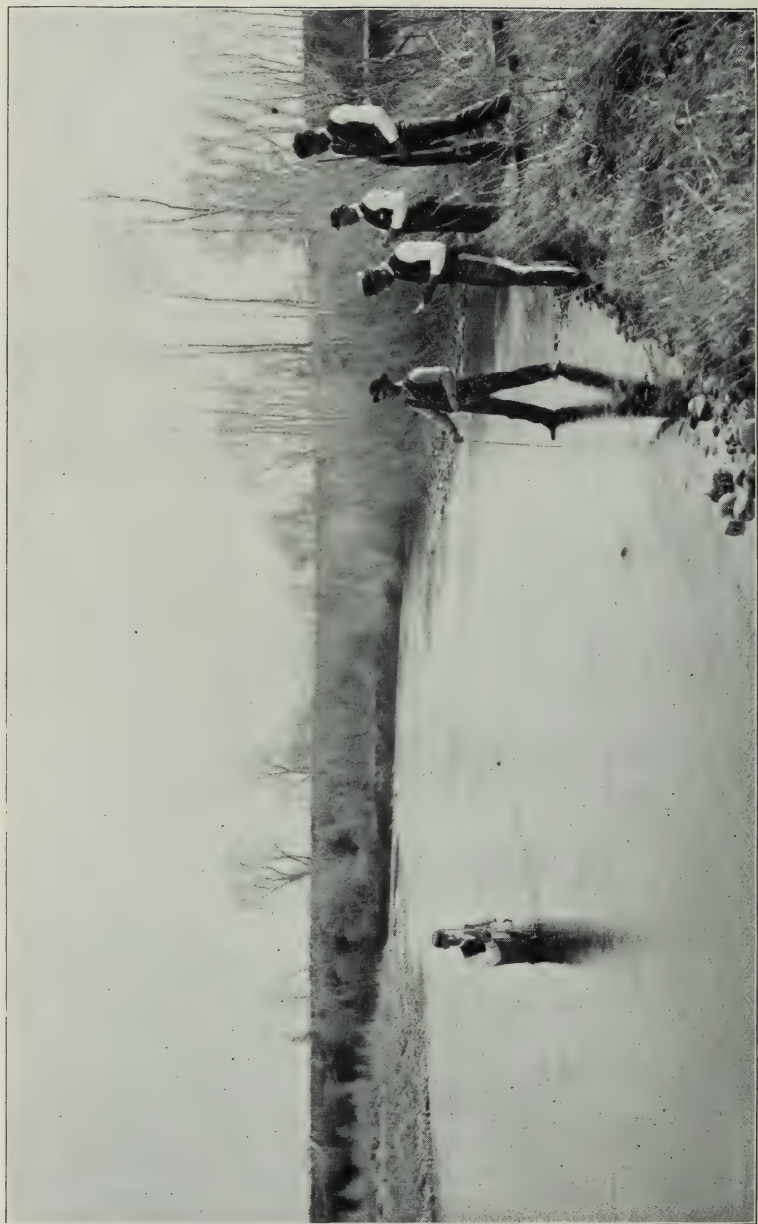
Besides the engineering instruments, the department possesses current meters of various patterns, water registers, means for measuring the discharge over weirs and through openings of some size, water motors, etc.

STRENGTH OF MATERIALS.

One term is given to the study of the Strength of Materials, including the theoretical and experimental



CLASS ROOM, PHYSICS AND ENGINEERING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



SENIOR CLASS, EXERCISE IN GAUGING STREAMS, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

study of the materials used in engineering. The department has a machine for the testing of cements, and a large testing-machine whose capacity is 50,000 pounds, which are used in connection with this course.

ORATORY.

Oratory has been defined as the "Art of influencing conduct with the truth sent home by all the resources of the living man."

The study of the Art of Expression is followed in some form throughout the College course. A healthful interest in the subject has been manifested by all the students.

Our public institutions, our form of popular government, great questions of moral and political moment, the almost boundless possibilities within the grasp of individual effort, all tend to increase and intensify the interest in, and to emphasize the importance of, this much-needed branch of education.

No one method will prevail.

Eclecticism—adopting the best of the four prevailing schools of thought in this art—is the plan of work.

The Imitative School.—Only as far as the fundamentals may be safely copied, furnishes the student ideals.

The Speculative School.—The Delsarte methods are followed in the young ladies' classes, in particular, and by all students making a special study of gesture, the aim being to give a thorough knowledge of the functions of the various organs and parts of the body in Expression, and, also, to develop conscious powers (which will, with sufficient practice, become automatic or manifestive, natural in results) in the use of these parts; in short, to bring about that perfect co-ordination of mind and body so seldom seen, yet so much to be desired in public speech.

The Impulsive School.—After thorough and exhaustive preparation of theme.

The Mechanical School.—So far as may be consistent in giving the student an understanding of the uses of the voice and the basic principles of pantomime and gesture. (Nine laws of gesture, etc.)

Very few text-books are required in this branch, as mimeographic copies of the best selections of English prose and verse are furnished the students. This gives a much broader range and scope to the study, and adds an interest to the work not otherwise attained.

A new departure for next year will be extensive work in extemporaneous speech, and its encouragement in the Literary Societies.

Practical rhetorical work will be given by the students before large audiences every Friday evening. These entertainments are becoming quite popular and tend to encourage the students to faithful work.

PHYSICAL CULTURE

is a part of the work required of all lady students. Much interest has been aroused in the young ladies' classes, and much has been accomplished in grace in movement and ease of bearing, promptness, precision, and strength and vigor.

Next year the plan of measurements now in practice in the very best colleges will be introduced.

Special physical exercises will be marked out as the individual needs of each student may require, and results will be closely watched.

The College is now better equipped for the study of the Art of Expression than ever before.

A large number of illustrations have been collected for the purpose of giving the students the advantage of a series of lectures on the Art of Oratory.

PSYCHOLOGY.

Hill's "Elements of Psychology" is the text-book in use.

The subject is taught principally by recitations, discussions, and lectures. Much oral work is done in connection with recitations based upon the text. Supplementary reading along the lines of recent investigations is encouraged. Contributions to the science, found on the pages of the best periodicals, supplement the text-book statements. The lives and writings of representative thinkers in the domain of metaphysics afford interesting topics for much oral instruction and library investigation. Something is done to point out the sources whence a knowledge of the history of psychology can be obtained. The relations of the subject to the work of the teacher are pointed out and made themes for study and discussion.

LOGIC.

This study is taught by recitations, discussions, and original exercises. Careful consideration is given to the principles of deductive reasoning. The syllogism is analyzed. The principles and methods underlying scientific investigation are made subjects of study, and the basis of class discussion and essay work. Practical application of what the student learns in the study of Logic is made in testing the validity of arguments and detecting fallacious reasoning.

The history of the science is considered and something learned of the writers whose works thereon have recognized merit. Gregory's "Practical Logic" is the text-book used.

POLITICAL ECONOMY.

The text-book in use is Mill's "Principles of Political Economy." Access is had to other standard works, such as Walker's "Science of Wealth," Bowen's "American Political Economy," Perry's "Elements of Political Economy," and Gregory's "Political Economy."

The important questions with which the subject deals are treated without attempt to uphold any narrow, one-sided view. Economic questions of particular importance to the people of the United States are given special prominence in the recitations, discussions, and lectures. These are considered from a historic and an impartial standpoint.

CIVIL GOVERNMENT.

The study of the Constitution of the United States, and that of the State of Colorado, is an important preparation for the duties of citizenship. An elementary text-book is used by the students in the Preparatory class. Later in the College course, a more thorough consideration of the subject is provided for.

PUBLIC RHETORICALS.

Each student enrolled has at least one public rhetorical exercise each College term, unless excused by Faculty vote. These exercises consist of declamations and recitations for the younger classes, and original exercises for the advanced students. The importance of these exercises to the student can scarcely be over-estimated, as every one should have a training which will enable him to present his views upon any question in public in an intelligent and a pleasing manner.

DEGREES.

Upon those who complete the work of any one of the five courses in a satisfactory manner, the State Board of Agriculture, upon recommendation of the Faculty of Instruction, confers the degree of Bachelor of Science.

The degree of Master of Science will be conferred upon all graduates of the College who pursue thoroughly some line of work after graduation, and who submit an acceptable thesis.

THE STATE AGRICULTURAL EXPERIMENT STATION.

The Central Station is located at the College, Fort Collins, Colorado, Larimer County. Five Sub-Stations are provided for, three of which are in operation and doing satisfactory work. They are the San Luis Valley Station, at Monte Vista, Rio Grande County; the Arkansas Valley Station, at Rocky Ford, Otero County; and the Divide Station, at Table Rock, El Paso County. The fourth, to be in Delta County, and the fifth, to be in Cheyenne County, have not yet been put in operation.

This department was created in acceptance of the conditions of the Hatch Act, and the work has been arranged in conformity with its provisions.

Bulletins are issued quarterly, or oftener, and reports annually, which are distributed to those who request them as long as the editions last. Address the Director, Fort Collins.

In connection with this work, the Secretary of the State Board annually distributes to applicants, seeds of such varieties as he may obtain from the Experiment Station or elsewhere. All cannot be supplied, but such seeds as we have will be sent where, in our judgment, they will do the most good. The only compensation asked or expected is a careful report of results, with notations on altitude and irrigation, kind and condition of soil, time of planting, and mode of cultivation.

THE LIBRARY.

The College Library was founded in 1878 by donations from members of the Faculty and interested citizens, aided by a small purchasing fund derived from the one-fifth mill tax. From this small beginning it has steadily grown in size, and now contains 4,172 bound volumes, and 6,880 pamphlets.

All the books have been selected with great care. The Library contains choice and valuable works on Agriculture ; Irrigation, principally by English, French, and Italian authors ; Mathematics ; Physics ; Chemistry ; Geology ; Botany and Horticulture ; Physiology ; Zoology and Entomology ; Mechanics and Engineering ; Political Economy ; Science of Education ; Military Science ; General History ; English and American Literature ; Translations of the Classics ; Biography ; Travels ; etc., etc., etc.

On the shelves are found bound volumes of the following-named periodicals :

<i>Appleton's Journal.</i>	<i>Gardeners' Monthly.</i>
<i>Atlantic Monthly.</i>	<i>Garden and Forest.</i>
<i>American Naturalist.</i>	<i>Harper's Magazine.</i>
<i>American Journal of Science.</i>	<i>Journal of Chemical Medicine</i>
<i>American Agriculturist.</i>	<i>and Veterinary Surgery.</i>
<i>Agricultural Science.</i>	<i>Journal of the Franklin Institute.</i>
<i>American Journal of Forestry.</i>	<i>Journal of the Association of the</i>
<i>American Machinist.</i>	<i>Engineering Societies.</i>
<i>Anthony's Photographic Bulletin.</i>	<i>Journal of Science and Arts.</i>
<i>American Meteorological Jour-</i>	<i>Littell's Living Age.</i>
<i>nal.</i>	<i>Nature.</i>
<i>American Bee Journal.</i>	<i>North American Review.</i>
<i>American Garden.</i>	<i>National Live Stock Journal.</i>
<i>American Architect.</i>	<i>Microscopical Journal.</i>
<i>Bulletin of the Torrey Botanical</i>	<i>Magazine of Horticulture.</i>
<i>Club.</i>	<i>Magazine of Western History.</i>
<i>Botanical Gazette.</i>	<i>Mining Industry and Trades-</i>
<i>Breeders' Gazette.</i>	<i>man.</i>
<i>Cottage Gardener.</i>	<i>Popular Science Monthly.</i>
<i>Canadian Entomologist.</i>	<i>Princeton Review.</i>
<i>Chemical News.</i>	<i>Publishers' Weekly.</i>
<i>Country Gentleman.</i>	<i>Public Opinion.</i>
<i>Century Magazine.</i>	<i>Scribner's Magazine.</i>
<i>Contemporary Review.</i>	<i>Scientific Farmer.</i>
<i>Eclectic Magazine.</i>	<i>Scientific American and Supple-</i>
<i>Educational Review.</i>	<i>ment.</i>
<i>Electrical World.</i>	<i>The Microscope.</i>
<i>Engineering News.</i>	<i>The Horticulturist.</i>
<i>Eclectic Engineering Magazine.</i>	<i>The Forum.</i>
<i>Farmers' Advocate.</i>	<i>Wallace's Monthly.</i>
<i>Gardeners' Chronicle.</i>	<i>Zeitschrift fur Analytische Chemie.</i>



LIBRARY READING ROOM, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

Current numbers of the following-named newspapers and periodicals can be found in the Library reading-room :

<i>American Architect.</i>	<i>Greeley Sun.</i>
<i>American Grange Bulletin.</i>	<i>Grand Valley Star.</i>
<i>American Machinist.</i>	<i>Good Health.</i>
<i>American Agriculturist.</i>	<i>Good Housekeeping.</i>
<i>American Garden.</i>	<i>Harper's Magazine.</i>
<i>American Investment.</i>	<i>Harper's Weekly.</i>
<i>American Naturalist.</i>	<i>Hoard's Dairyman.</i>
<i>American Meteorological Journal.</i>	<i>Journal of Education.</i>
<i>American Microscopical Journal.</i>	<i>Journal of the Franklin Institute.</i>
<i>American Journal of Science.</i>	<i>Journal of the Association of the En-</i>
<i>Agricultural Science.</i>	<i>gineering Societies.</i>
<i>Art Amateur.</i>	<i>Journal of the Chemical Society.</i>
<i>Botanical Gazette.</i>	<i>Journal fur Landwirtschaft.</i>
<i>Board of Health Bulletin.</i>	<i>Laws of Life.</i>
<i>Bee Journal.</i>	<i>Loveland Reporter.</i>
<i>Books.</i>	<i>Live Stock Journal.</i>
<i>Brighton Register.</i>	<i>Massachusetts Plowman.</i>
<i>Breeders' Gazette.</i>	<i>Microscope.</i>
<i>Colorado Farmer.</i>	<i>Nature.</i>
<i>Colorado Index.</i>	<i>North American Review.</i>
<i>Country Gentleman.</i>	<i>Naturalist's Monthly Bulletin.</i>
<i>Chemical News.</i>	<i>Orange Judd Farmer.</i>
<i>Century Magazine.</i>	<i>Pacific Rural Press.</i>
<i>Cosmopolitan.</i>	<i>Public Opinion.</i>
<i>Contemporary Review.</i>	<i>Printer's Ink.</i>
<i>Canadian Entomologist.</i>	<i>Popular Science Monthly.</i>
<i>Die Gartenlaube.</i>	<i>Pharmaceutical Era.</i>
<i>Electrical World.</i>	<i>Rural New Yorker.</i>
<i>Engineering News.</i>	<i>Scientific American and Supplement.</i>
<i>Fort Collins Courier.</i>	<i>Scribner's Magazine.</i>
<i>Fort Collins Express.</i>	<i>The Industrialist.</i>
<i>Field and Farm.</i>	<i>The Statesman.</i>
<i>Farm and Home.</i>	<i>The Ranch.</i>
<i>Forum.</i>	<i>The Voice.</i>
<i>Garden and Forest.</i>	<i>The Dakota Farmer.</i>
<i>Gardeners' Chronicle.</i>	<i>Wallace's Monthly.</i>
<i>Greeley Tribune.</i>	<i>Zeitschrift.</i>

The Library is well-lighted and furnished. It is open from 8 a. m. to 5 p. m. on week days. Students have free access to the shelves. Books may be drawn for a period of two weeks. The Library is catalogued according to the Dewey Decimal system, the author-and-title catalogue being complete to date. A comprehensive subject cata-

logue is now being completed. The cards are neatly and legibly written, and systematically arranged in convenient and accessible cabinets.

LITERARY SOCIETIES.

There are two Literary Societies connected with the College—the “Philo-Æsthesian” and “Columbian.” Students are admitted to these societies by vote of the members. The fees and dues are not burdensome.

CONDITIONS OF ADMISSION.

The College admits students of both sexes, provided they pass a satisfactory examination in the common branches, viz.: Reading, Writing, Spelling, Grammar, Arithmetic, and Geography; and provided they are at least 15 years of age.

The work of the Preparatory year is, in part, a thorough review of Grammar and Arithmetic, with the additional subjects of United States History, Physical Geography, Elocution, Composition, Word Analysis, and Drawing.

Candidates for admission should appear for examination on the dates announced on the calendar of exercises, preferably at the opening of the College year. Those entering later, or proposing to take advanced work, must be prepared to take a more thorough and prolonged series of examinations.

EXAMINATIONS FOR ENTRANCE.

Examinations for admission to the Freshman class are as follows:

In *Reading*, candidates must be able to read understandingly, and with proper accent and emphasis.

In *Writing* and *Orthography*, they must be able to write from dictation, sentences from standard pieces of English literature, both prose and poetry, sufficient in

number to test their qualifications in Penmanship and Orthography.

Candidates will also be required to pass examinations in *Arithmetic*, *Grammar*, and *Descriptive Geography*.

Candidates for advanced classes or work must be examined on all previous work, or bring certificates of standing from schools having an equivalent grade of work.

Those desiring to enter the Preparatory class must show some knowledge of Grammar, and be examined in Arithmetic, as far as interest, and in Descriptive Geography. They must show a general knowledge sufficient to enable them to take up the work.

Specimen questions follow, so that the candidates may gain an idea as to what will be required upon presenting themselves for entrance to the Freshman class.

Similarly thorough examinations will be made for admission to higher classes in all subjects completed by them :

ARITHMETIC.

1. Given the sum of two numbers and one of the numbers; how do you find the other? Same for product. If same number be added to both minuend and subtrahend, how is the difference affected? Why? If the same number be added to both dividend and divisor, how is quotient affected? Why? If the minuend and subtrahend be multiplied by same number, how is difference affected? Why? If both the dividend and divisor be multiplied by any number, how is the quotient affected? Why? If the subtrahend be increased and the minuend remain unchanged, how is the difference affected? Why? If the dividend be unchanged and the divisor be increased, how is quotient changed? Why?

2. How are fractions added? How multiplied? How divided? How reduced to a desired denominator?

How reduced from common form to decimal form? Give reasons for various operations.

3. How is the value of a note found when partial payments have been made upon it? How is the proceeds of a note found when the note is discounted at a bank? How is the cost of a bill of exchange found?

4. Find the square root of 204,629. Find the cube root of 204,629.

NOTE.—The student's understanding of the principles of Arithmetic, as called for in the preceding questions, of the methods to which they lead, and his skill in applying these, will be thoroughly tested by numerous exercises. He must be thoroughly conversant with the tables of the ordinary English measures, and will find a knowledge of the metric system of measures advantageous.

SPELLING.

1. The *battle* was short and *sanguinary*.
2. At the first *volley* they ran away *accompanied* by their *chief*.

3. If such a *structure* ever *occupied* the ground, it could have been nothing more than a *temporary* affair for the *storing* of *provisions*.

4. At Biel, Switzerland, an *electric turbine-driven* power *transmission* plant has been *established*. The *alternating current* used and the railway shops *served* are two miles *distant*.

5. In the first place, the *prescribed* approval of the *Society* would *virtually clothe* that *organization* with the *appointing* power, while the *burden* of *responsibility* would be placed upon the *Governor*.

6. It must be a *source* of *gratification* to all who have had to do with the *creation* of the *Columbian Exposition* that their *labors* are so *signally recognized* and their *achievements* so *generously lauded*.

7. Upon his *arrival* at Fort Dearborn, Captain Wells *advised* the *destruction* of all extra arms, *ammunition*, and *liquor*, and the *immediate abandonment* of the fort.

8. As *certainly* as the *perception* of an object *lying* in our path warns us *against stumbling* over it; so *certainly* do those more complicated and *subtle* perceptions which *constitute science* warn us *against tumbling* over *intervening obstacles* in the *pursuit* of our *distant ends*.

9. According to the *custom* which has *descended* from age to age *among* the *monarchs* of the *torrid zone*, Rasselas was *confined* in a *private palace*, with the other sons and *daughters* of *Abyssinian royalty*, till the order of *succession* should call him to the *throne*.

10. The place, *which* the *wisdom* or *policy* of *antiquity* had *destined* for the *residence* of the *Abyssinian princess*, was a *spacious valley* in the *kingdom* of *Amhara*, *surrounded* on every side by *mountains*, of which the *summits* *overhang* the *middle part*.

GRAMMAR.

1. Classify sentences, and illustrate each class. Name the essential parts of a sentence.

2. Explain and illustrate the use of the possessive sign. Illustrate the different uses of the participle and the infinitive.

3. Compose sentences illustrating the different kinds of adverbial clauses.

4. Illustrate and explain the distinction between a dependent and an independent clause.

5. Illustrate the offices of *What*, *That*, and *But*.

6. What are the two great classes of conjunctions, and what is their difference?

7. Name and define the modifications of the noun.

8. Give and illustrate the several ways of forming the plural.

9. Parse the words in italics:—The *Teacher told* the pupil *to study* his lesson.

10. Correct where necessary:—Them that study Grammar talk no better than me.

You seen John and he together.

GEOGRAPHY.

1. Locate Pittsburgh, Cleveland, Albany, Washington, Detroit.

2. In going by boat from St. Paul to New Orleans, what principal cities would be passed?

3. Name the principal cities on the Missouri river. On the Ohio river. On the Delaware river.

4. Bound Colorado. What are the chief industries of the state?

5. What countries border on the Mediterranean Sea? On the Red Sea?

6. Locate the Sandwich Islands. For what are they noted?

7. What is latitude? Longitude?

8. Over what waters would a vessel pass in going from London to Calcutta?

9. Between what parallels of latitude does the United States lie?

10. Locate Alaska. Name its largest river. Of what value is the Territory to the United States?

REGULAR AND SPECIAL COURSES.

Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study, and in case it is allowed, the student must show that he is well-qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, or will he be allowed to drop a study, unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee on Examinations, by mail or otherwise, at least two days before the opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular courses.

LEAVING COLLEGE.

A student will not be allowed to leave College in term time without leave of absence granted by the President or the Faculty; otherwise the student will be liable to *suspension* or *expulsion*. Temporary leave of absence can be granted by the President, or the officer in charge during his absence. Final separation from the College must be acted upon by the Faculty.

LABOR.

Labor, two hours each school day, is required of all students not excused for physical disability. This labor (see Course of Study) is performed on the farm, or in the garden, in the shops and laboratories, in field work, in irrigation, and in surveying and engineering.

DISCIPLINE.

The discipline of the College is administered by the Faculty according to a system of demerits.

Misconduct, in or out of classes, unexcused absences from any required College exercises, meddling with College property, etc., receive one or more demerits, as the case may seem to require. Parents of students who receive ten demerits will be notified of the students' misconduct by the President; twelve demerits suspend, while fifteen expel the student from the College.

Study hours begin at 7 P. M. and continue until 10 P. M.

GRADES IN WORK AND STUDY.

Each student is expected to maintain a grade of 65, on a scale with 100 as perfect. A student is graded as passed in any study, or branch of manual practice, when the average of his daily progress and his term examination equals 65, on a scale of 100 as perfect.

Failure may be made up, and tested by special examination, or the study must be again taken up with a subsequent class.

MEANS FOR INSTRUCTION AND ILLUSTRATION.

The College Hall, with its new addition, contains large recitation rooms for the following-named departments: Mathematics, English and Stenography, Physics and Irrigation Engineering, History, Literature, and Language; also, commodious Library and reading-rooms, Museum, Zoological Laboratory and recitation-room, with work-room; also offices for officers of the College, rooms for Board of Agriculture, Faculty, etc. Finally, there is a large and well-arranged Assembly room, with opera chairs, for seating 300 persons, stage, retiring-rooms, cloak-rooms, etc., attached, for the convenience and comfort of the school and the public. The whole is heated by steam and admirably lighted by electric lights from the works of the Fort Collins Electric Light Company. The basement is heated and lighted, and contains an Armory, 40x72 feet, for purposes of drill and gymnasium, the heating plant, bath-rooms, rooms for janitor, storage, etc.

The Chemical Laboratory has a lecture-room for forty students; a work or analytic room, with desks for twenty-four students, each desk being supplied with water and gas for the use of each student, and convenient hoods for ventilation; and a Station Laboratory, with balance-room, distillation-room, etc.

The Botanical and Horticultural Laboratory, completed in May, 1890, has fine rooms for instruction and laboratory work, office, tool-room, seed-room, grafting-room, and ample basement room for storage. The conservatory attached, 20x50 feet, contains about 200 species, or 1,000 plants representing many interesting and rare botanical families, and is heated by improved hot-water apparatus.

The orchards and grounds are carefully laid out, and planted to ornamental shrubs and trees. Here we see the plantation of forest trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot-beds, and cold-frames.

The new Agricultural Hall is now completed. It is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for class-room work. The first floor is divided into a hallway and four large, comfortable rooms. Here will be found the office of the Professor of Agriculture and Director of the Experiment Station, laboratory, agricultural museum, and seed-room. The basement has four apartments which are used for heating apparatus, temporary dairy department, and storage.

The farm of 240 acres, nearly all under cultivation, includes the experimental ground of about 20 acres, containing three plots, A, B, and C, the first consisting of fifty smaller plots, the second of thirty-three, ranging in size from 1-40 to 1-5 of an acre, and the third of sixteen, containing 1-4 acre each. All are permanently laid with drives and walks, and have iron stakes lettered and numbered to designate the corners. These permanent corner-stakes are four feet long, of which three and one-half feet are driven into the earth. In addition, there are several plats of one acre each, for larger experiments on the farm.

The live stock consists of Clydesdale and Percheron grade draft horses, Short-Horn Durham cattle, Shropshire Down and Merino sheep. A selection of registered hogs, representing the Chester White, Poland China, and Berkshire breeds, has been made. Other representative breeds of stock will be added as rapidly as means and accommodations will admit.

The Mechanic Arts Hall includes a large main building two stories in height, and an ell portion one story high.

The machine-shop occupies the first floor in the north end of the building; it is supplied with a fine assortment of apparatus for working the metals. Around the room are benches, with iron vises fitted for the work in filing and chipping; and connected to the main line-shaft are the following high-grade machines: A Gray 6-foot planer, a Brown & Sharpe Universal milling machine, with gear cutting attachments, a Gould & Eberhardt 15-inch shaper, a 14-inch and a 17-inch engine lathe, and a speed lathe, a Bickford 20-inch drill, a grind-stone, and an emery wheel. In addition, there is supplied a good assortment of gauges, reamers, taps, dies, and other small tools.

At the end of the machine-room is the office of the Professor in charge and the tool-room. In the tool-room are kept such tools as are not in general use, but which are necessary for special work, or such tools as would become injured or lost if scattered around. By an order from the Professor, any tool in the tool-room can be obtained and used by the students. In the west end of the machine-room a space is set off for the experimental work in the testing of materials, valve-setting, testing by brakes, etc. This testing laboratory is supplied with a testing machine, a 12-horse power Hendey & Meyer engine fitted with a Prony brake, a Blake steam-pump, gauges, thermometers, indicators, etc.



AGRICULTURAL CLASS SCORING CATTLE, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

Opening off the machine-room is the engine-room, which is separated from the hall by glass partitions. In this room is the 50-horse power Harris-Corliss engine for running the shops. This engine is supplied with indicator attachment, and the student will be given a chance to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators with extra springs. A dead-weight gauge tester affords a means of correcting steam-gauges.

Opposite the engine-room is the wash-room, with lockers for one hundred students.

Adjoining the wash-room is the boiler-room, containing the large boiler used to furnish the engines with steam and heat the building.

The Department of Engineering and Physics has the class-room fitted with water, electric light from its own dynamo, and curtains for darkening the room for the use of the solar-lantern and stereopticon.

In Physics it has a collection of apparatus both for illustration and experiment, which is at the service of the student when he is prepared to use it. This collection includes a set of U. S. Standard Weights and Measures, furnished by the Government; micrometers; balances; air pumps; induction coil; standard ohm; standard cell; galvanometers; electrometers; voltmeters; ammeters; dynamo; resistance coils, etc., with work-rooms, dark-room, and rooms for laboratory practice.

For use in Engineering and Hydraulics, it has current meters of various patterns, including one electrical registering meter made by Buff and Berger, of Boston; a Darcy-Pitot tube; various instruments to register the rise and fall of water or the amount, one imported from Paris recording the rise and fall of water some twelve or fifteen miles away; an apparatus for the measurement of the flow of water through orifices and over weirs; pressure gauges;

photographs and plans of hydraulic structures; and a collection of slides for the lantern made from negatives taken in this and other countries by the Professor of Engineering. A water motor presented the Department by the Pelton Water Wheel Co., and water meter by the Equitable Meter Co., add to the equipment.

It has five transits, two being supplied with solar attachment; levels; compasses; plane table; leveling and target rods; chains and tapes for land surveying and for engineers' use; odometers; hand levels; planimeter for determining areas; and apparatus for photographic surveying, etc.

A Fairbanks cement tester, with full set of molds, gives the means of testing the strength of cements to 1,000 pounds per square inch. A large 50,000-pound testing machine gives the opportunity to test other materials within the limit.

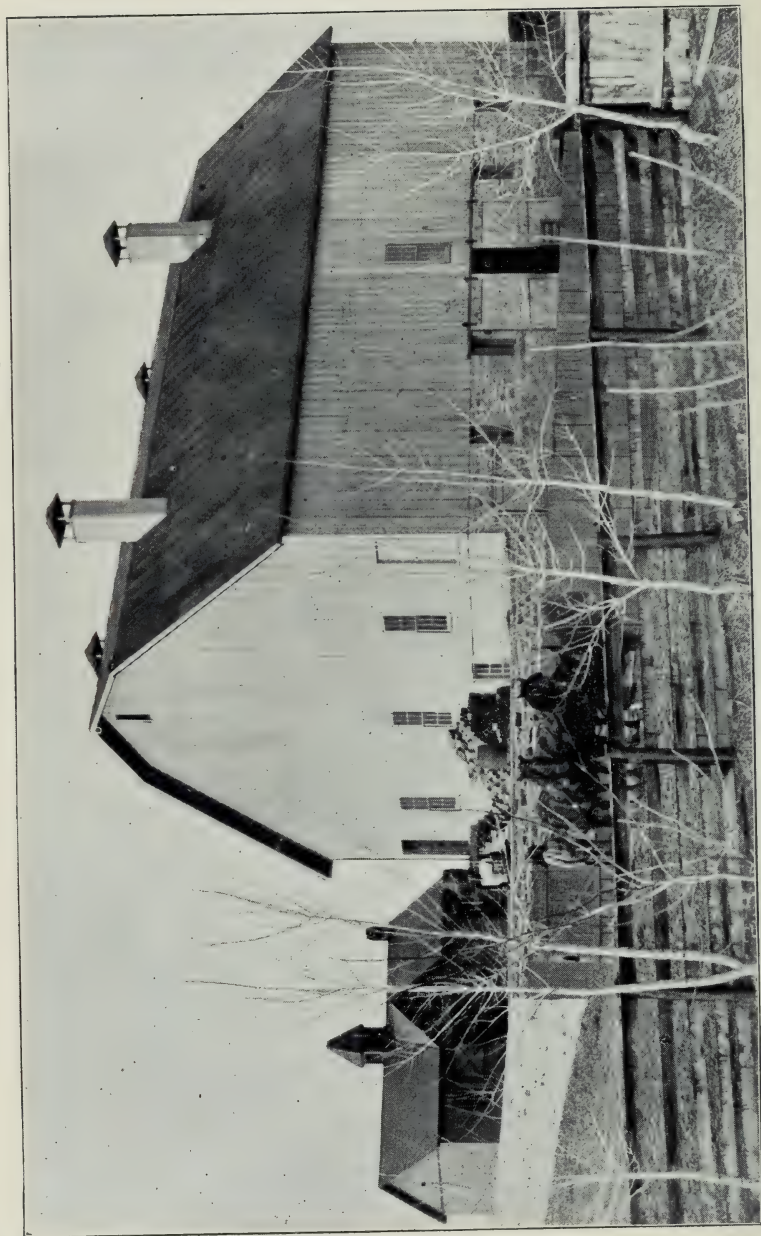
A complete set of meteorological instruments in daily use, including barometers, thermometers, psychrometers, anemometers, statoscope pluviometers, many of them imported, is available for illustration and study.

The Military Department has one hundred and fifty cadet rifles and two 3-inch rifled field-pieces from the War Department. Each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice, and artillery firing.

The Scientific Department is supplied with a fine cabinet of specimens, illustrating Botany, Entomology, Geology and Mineralogy, Zoology, and Comparative Anatomy.

LOCATION.

The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer County, which is one of the most prosperous agricultural counties in the



COLLEGE BARN, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

State. The town contains 2,500 inhabitants, and is beautifully situated about five miles from the foothills, and in full view of Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its streets and buildings are finely lighted by an excellent electric light plant; and its sidewalks are exclusively made of excellent flag-stone, which is found in large quarries almost at its doors.

The College is at the south side of town; on either side of the Colorado Central Railroad are its buildings and the farm. Visitors are always welcome. They find the town accessible by six trains, which arrive daily from Denver and other points. With the advantages of pure water, a beautiful location, electric lights and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

HISTORY.

The origin of The State Agricultural College of Colorado, like that of its sister institutions in other States, dates back to an act of Congress, passed July 2, 1862. Therein it is proposed to endow in the several States and Territories, by grants of public lands, "*a college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.*"

This act gave the College an endowment of 90,000 acres of land. From this source the College now receives an annual income of nearly \$7,000.

The Constitution of Colorado gives the College an independent existence and a permanent home in Fort Collins. Three citizens of the town donated to the State *two hundred and forty acres of land* whereon to erect the necessary buildings. In 1877, the Legislature provided for the support of the College by levying a tax of one-tenth of a mill on all the taxable property of the State. At this time "The State Board of Agriculture" was created, and all matters pertaining to the management of the College were placed under its control. The one-tenth mill levy was increased, in 1879, to one-fifth of a mill. The present levy of one-sixth of a mill dates from an act of the Legislature passed in 1891. The corner stone of the Main College Building was laid July 27, 1878. This building was completed and ready for occupancy early in the following year.

The Legislature, in addition to providing for the support of the College by the mill tax, before named, has made the following-named special appropriations :

YEAR.	AMOUNT.	FOR WHAT PURPOSE
1881.....	\$ 5,000.....	College Dormitory.
1883.....	\$10,000.....	Mechanic Shop.
1889.....	\$18,000.....	Extension of Main Building.
1893.....	\$ 6,500.....	Sewer System.

The State Experiment Stations are intimately connected with the College, and are under the control of its governing board. These stations, five in number, owe their existence to the acceptance, by the State, of the provisions of the Congressional Act, better known as the "Hatch Act," of 1888. The College receives \$15,000 a year from the Treasury of the United States for the performance of the experimental work required of the stations.

The College also receives support from the General Government under the provisions of an Act of Congress, passed August 30, 1890, known as the "Morrill Bill." The

first annual payment from this source was \$15,000. The act provides that this sum shall be increased \$1,000 yearly until it reaches \$25,000, when it shall become permanent.

The annual revenues of the College may be summarized as follows:

1. Land Income Fund, derived from interest on money received from sales of land donated by the General Government, and rents of leased lands not yet sold—\$7,000.

2. "Hatch Act," support of the United States Experiment Stations—\$15,000.

3. United States Fund, "Morrill Bill," in 1893—\$18,000. (This will ultimately reach \$25,000 per annum.)

4. Special Fund, derived from sale of stock, farm products, and the like (estimate based upon the average for four years)—\$2,000.

5. State Tax Fund, one-sixth mill on all the taxable property of the State—\$36,000.

Yearly receipts from all sources—\$78,000.

An inventory, taken in December, 1892, shows the value of the College buildings, grounds, and equipments to be \$176,600.26.

Prior to 1887, but one course of study was pursued by students. Since that date the course has been uniform up to the close of the Sophomore year, and at that point has been differentiated. The following-named courses, from which students can make choice, all lead to the degree of Bachelor of Science, the only degree conferred by the College: Agricultural Course, Mechanical Course, Irrigation Engineering Course, Chemical Course, and Ladies' Course. There is also provision made for a "Short Course of Agriculture," but no degree is conferred upon those who complete it,

The enrollment of students and the number of graduates for each year since the opening of the College, are as follows :

ENROLLMENT.

YEARS.	MALES.	FEMALES.	TOTAL.	GRADUATES.
1880.....	14.....	11.....	25.....	0
1881.....	35.....	22.....	57.....	0
1882.....	49.....	32.....	81.....	0
1883.....	50.....	31.....	81.....	0
1884.....	40.....	37.....	77.....	3
1885.....	50.....	46.....	96.....	6
1886.....	45.....	42.....	87.....	1
1887.....	63.....	42.....	105.....	4
1888.....	71.....	38.....	109.....	4
1889.....	73.....	34.....	107.....	2
1890.....	56.....	18.....	74.....	9
1891.....	77.....	29.....	106.....	3
1892.....	101.....	45.....	146.....	9
1893.....	135.....	44.....	179.....	7

All College fees were abolished in January, 1891. *Tuition in all the regular and special classes of the College is free.* There is no charge of any kind for material used in laboratory work or for books taken from the College Library.

A fair statement of the necessary expenses of a student for the College-year of 40 weeks, is as follows :

Board, heat, light, and room-rent----	\$ 160 00
Cadet uniform-----	21 00
Laundry expenses-----	20 00
Books, stationery, etc.,-----	15 00
Total -----	\$ 216 00

Board in private families can be obtained at from \$3.50 to \$5 per week. Students who labor on the farm or in the garden receive from 5 cents to 15 cents per hour, according to the quantity and quality of the work performed.

The Library contains 4,172 books and 6,880 pamphlets, and is kept open throughout the year. The will of Mrs.

Anna Jones, deceased, gives the College authorities property valued at \$5,000, which is to be sold and the proceeds used in the purchase of books for the Library.

The College now comprises the following-named departments: Agriculture; Botany and Horticulture; Chemistry and Geology; History, Literature, and German; Mathematics; Mechanics and Drawing; Military Science; Physics and Engineering; Zoology and Entomology; English and Stenography; Elocution and Calisthenics; and the Experiment Station.

The work of the College is carried on in strict conformity with a section of the General Laws of the State, which reads as follows:

“The design of the institution is to afford thorough instruction in agriculture and the natural sciences connected therewith. To effect that object most completely, the institution shall combine physical with intellectual education, *and shall be a high seminary of learning*, in which the graduates of the common school, of both sexes, can commence, pursue, and finish a course, terminating in thorough theoretical and practical instruction in those sciences and arts which bear directly upon *agriculture and kindred industrial pursuits.*”

CALENDAR.

1893=1894.

SEPTEMBER.

S	M	T	W	T	F	S
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30



MARCH.

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25	26	27	28	29	30	31

OCTOBER.

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NOVEMBER.

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MAY.

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DECEMBER.

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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..



JUNE.

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JANUARY.

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28	29	30	31	..	..	..



JULY.

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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..

FEBRUARY.

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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	..	..	..



AUGUST.

S	M	T	W	T	F	S
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19	20	21	22	23	24	25
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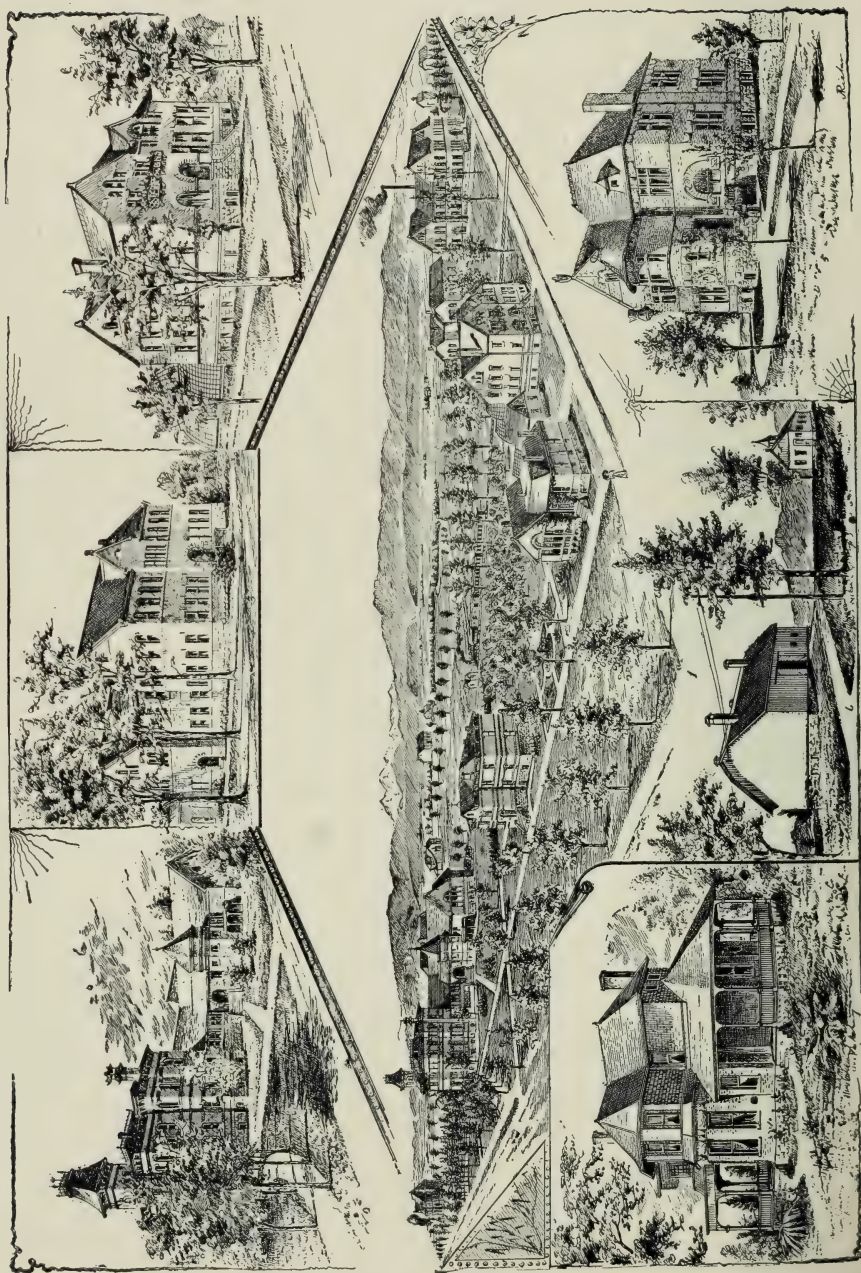
Calendar of Exercises.

1893-1894.

Entrance Examinations-----Monday, September 4, 1893
Fall Term begins-----Tuesday, September 5, 1893
Fall Term closes-----Friday, December 1, 1893
Winter Term begins-----Monday, December 4, 1893
Holiday Recess begins-----Friday, December 22, 1893
Holiday Recess closes-----Monday, January 1, 1894
Winter Term closes-----Friday, March 9, 1894
Spring Term begins-----Tuesday, March 20, 1894
Baccalaureate Address-----Sunday, June 3, 1894
State Board of Agriculture meets--Wednesday, June 6, 1894
Commencement Exercises-----Thursday, June 7, 1894

Table of Contents.

	PAGE.
State Board of Agriculture.....	2
Officers and Committees.....	3
Faculty of Instruction.....	4
Officers of the Experiment Station.....	5
Register of Students.....	6
Summary.....	11
Graduates.....	12
Alumni Association.....	14
Courses of Study and Labor.....	15
Recitation and Labor Time-tables.....	23
Departments of Instruction and Labor.....	26
Agriculture.....	26
Physiology.....	28
Zoology.....	29
Entomology.....	29
Botany and Horticulture.....	30
Chemistry and Geology.....	32
History, Literature, and Language.....	36
English and Stenography.....	38
Mathematics.....	39
Mechanics and Drawing.....	42
Military Science.....	45
Physics and Irrigation Engineering.....	46
Oratory.....	49
Psychology, Logic, and Political Economy.....	50
Miscellaneous.....	52
The Experiment Station.....	53
The Library.....	53
Literary Societies.....	56
Conditions of Admission.....	56
Examinations for Entrance.....	56
Courses, Regular and Special.....	60
Leaving College, Labor, and Discipline.....	61
Means for Illustration.....	62
Location.....	66
History.....	67
College Expenses.....	70
Calendar.....	72
Calendar of Exercises.....	73
Table of Contents.....	74



The State Agricultural College Buildings, Fort Collins, Colorado.

REGISTER
OF THE
Officers and Students

OF

The State Agricultural College

Compliments of

ALSTON ELLIS,

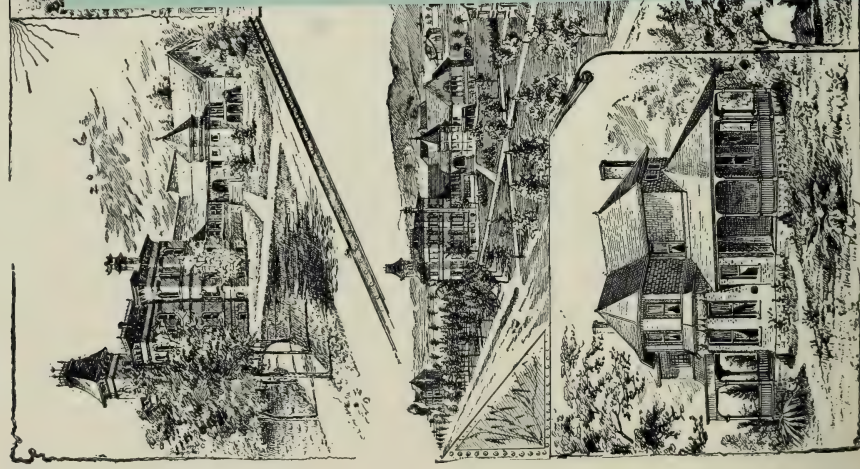
President of The State Agricultural College,

FORT COLLINS, COLORADO.

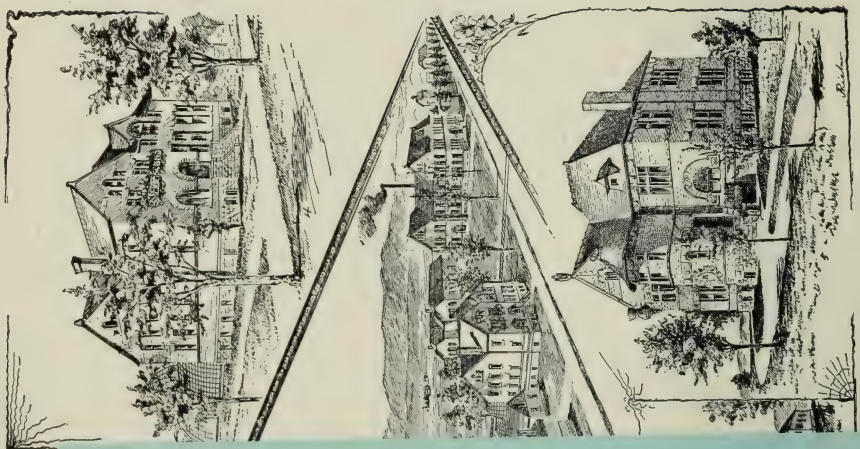
LEASE EXCHANGE.



1893-1894.



The State Agriculture



Collins, Colorado.

REGISTER

OF THE

Officers and Students

OF

The State Agricultural College

FORT COLLINS, COLORADO.

COURSES OF STUDY

AND

GENERAL INFORMATION.

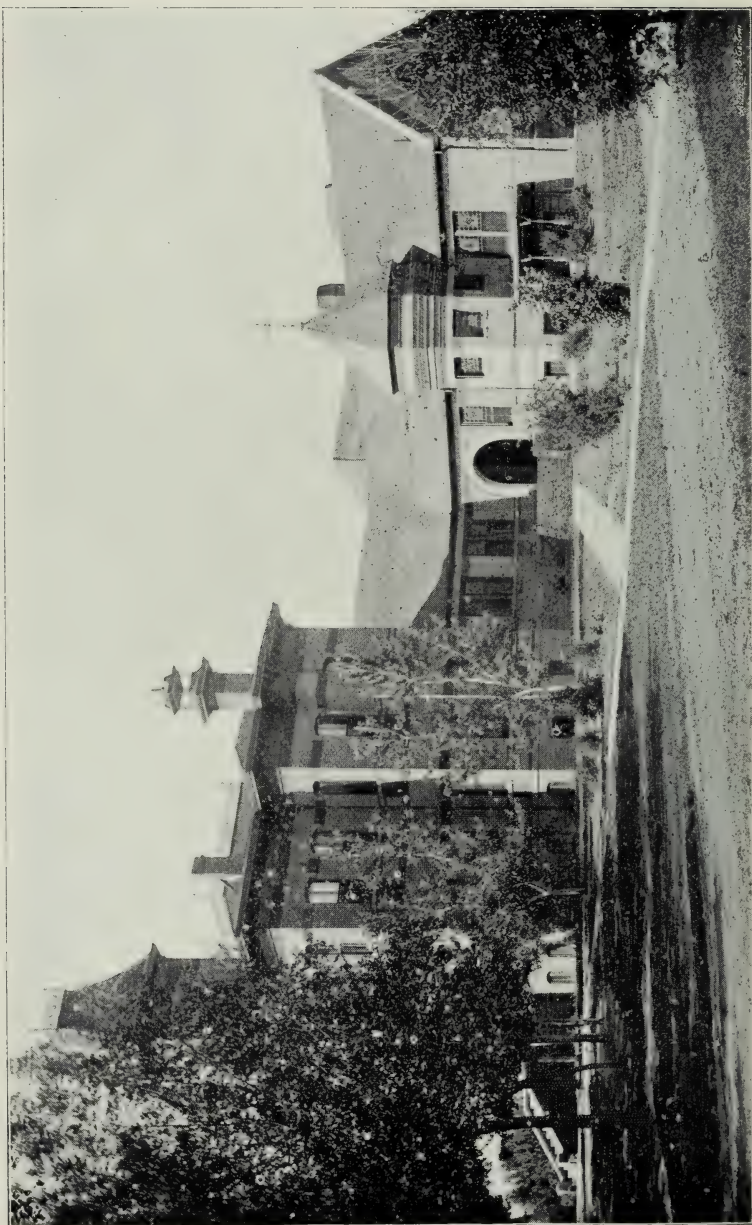


1893-1894.

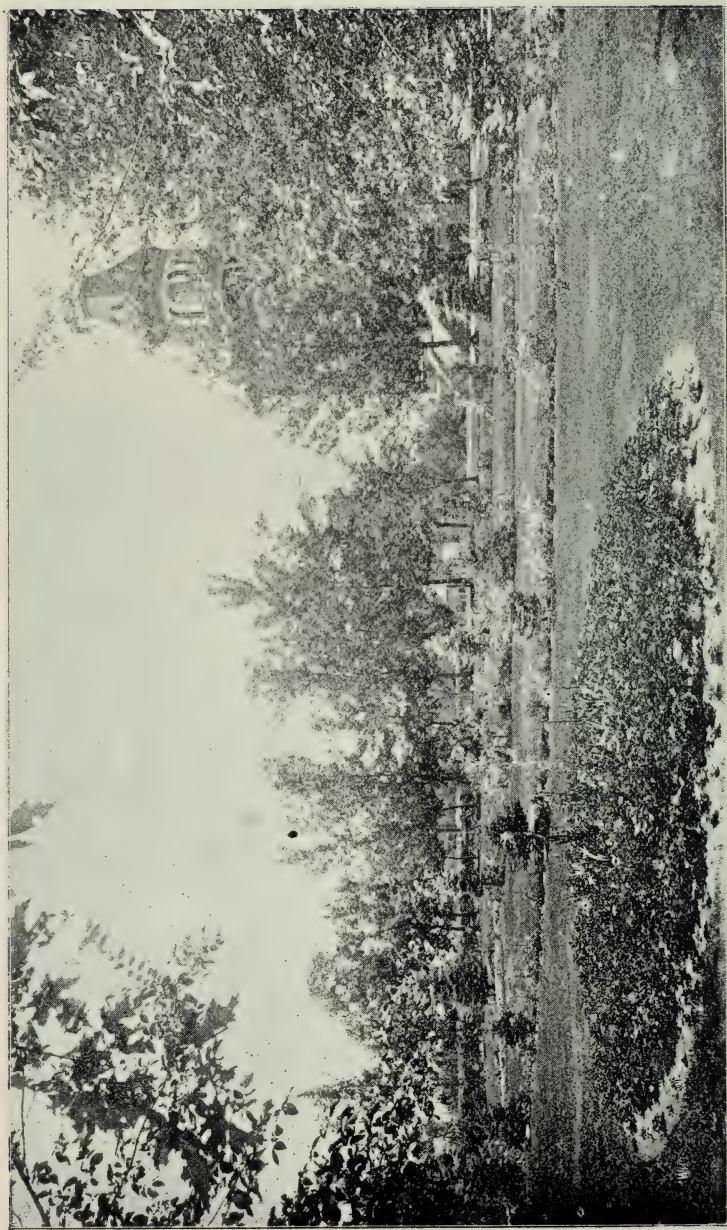
FORT COLLINS, COLO.:
PUBLISHED BY THE STATE AGRICULTURAL COLLEGE.
1894.

The State Board of Agriculture.

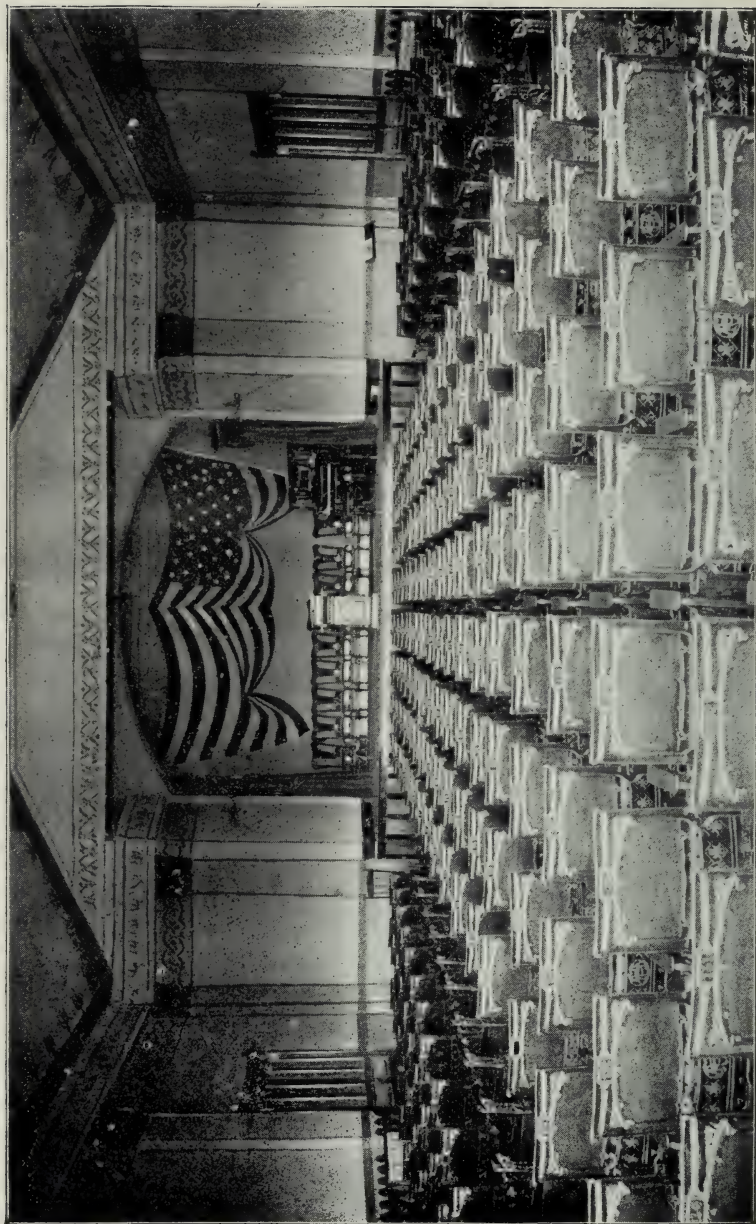
					Term Expires.
HON. CHARLES H. SMALL,	-	Pueblo,	-	-	1895
HON. FRANK J. ANNIS,	-	Fort Collins,	-	-	1895
HON. JOHN J. RYAN,	-	Loveland,	-	-	1897
HON. A. L. EMIGH,	-	Fort Collins,	-	-	1897
HON. JAMES E. DuBOIS,	-	Fort Collins,	-	-	1899
HON. JOSEPH S. McCLELLAND,	-	Fort Collins,	-	-	1899
HON. JAMES L. CHATFIELD,	-	Gypsum,	-	-	1901
HON. A. LINDSLEY KELLOGG,	-	Rocky Ford,	-	-	1901
GOVERNOR DAVIS H. WAITE,	}	<i>ex-officio.</i>			
PRESIDENT ALSTON ELLIS,					



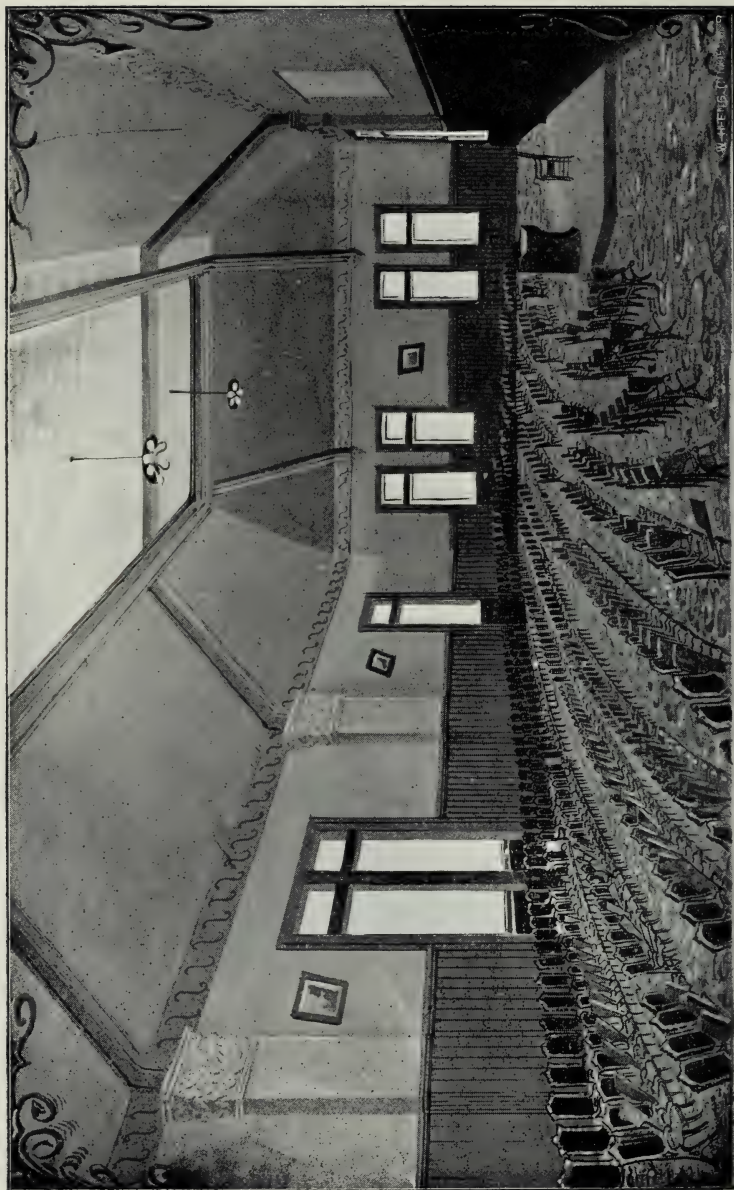
MAIN BUILDING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



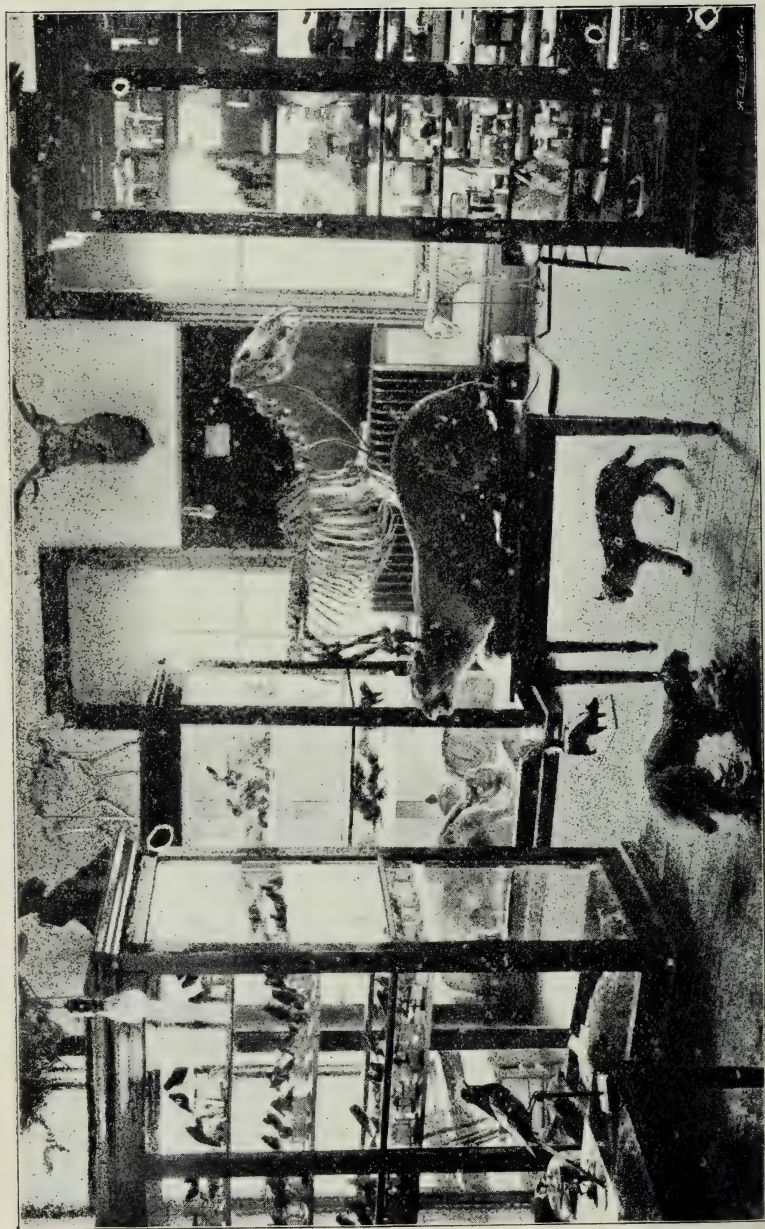
SUMMER SCENE, FRONT OF MAIN BUILDING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



COLLEGE CHAPEL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



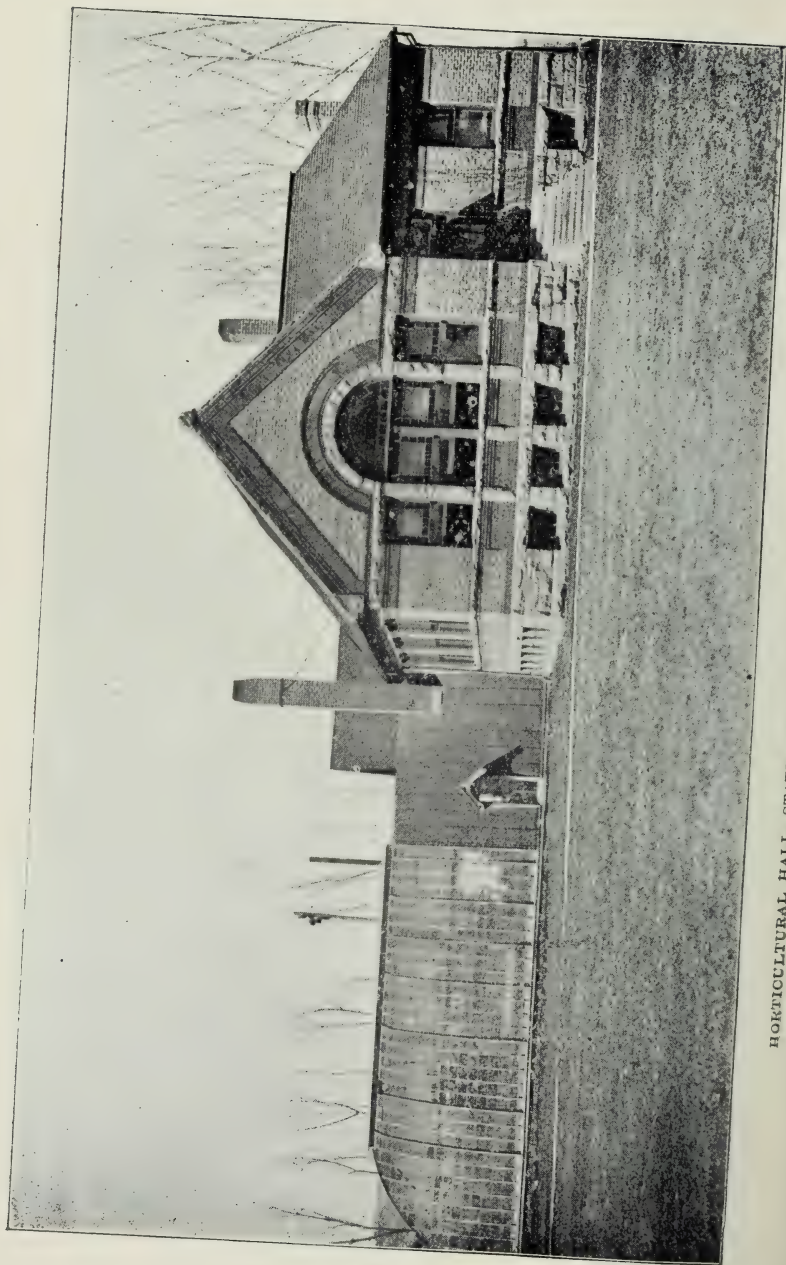
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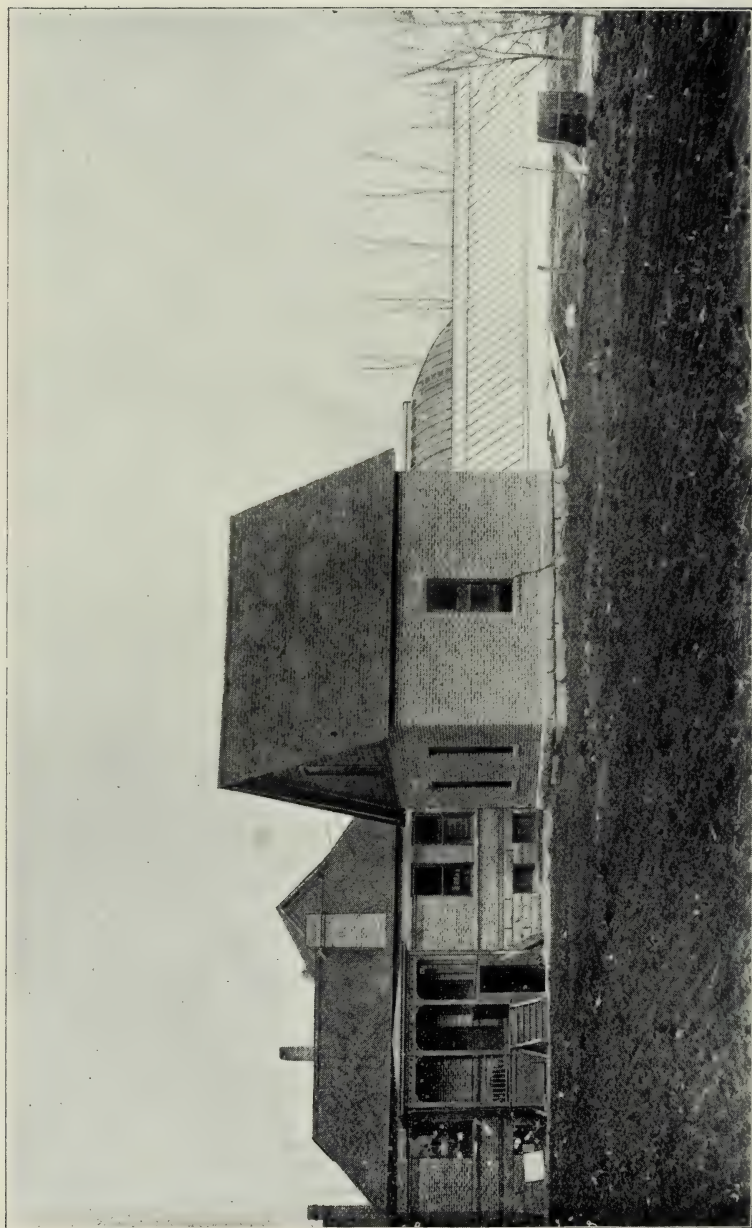
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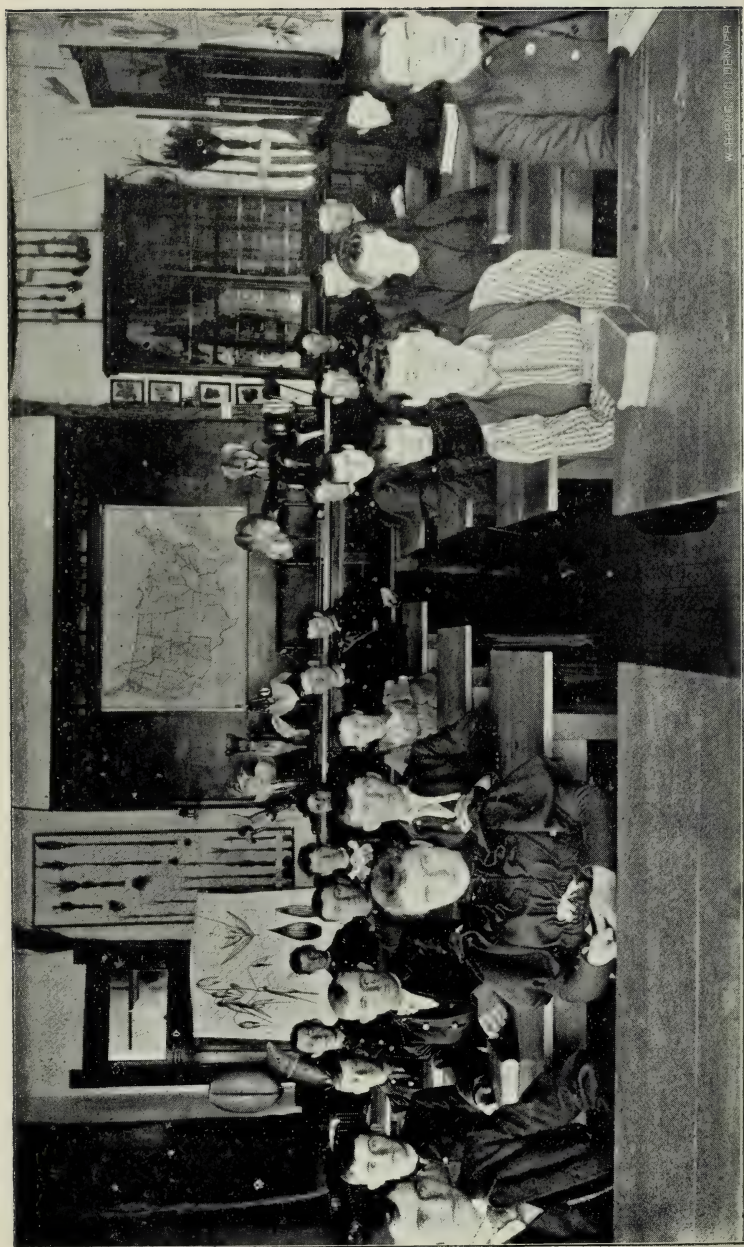
CLASS IN PHYSIOLOGY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



HORTICULTURAL HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



FORCING HOUSE, HORTICULTURAL DEPARTMENT, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



W. H. BROWN, FORT COLLINS, CO.

LECTURE ROOM AND CLASS, DEPARTMENT OF BOTANY AND HORTICULTURE, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



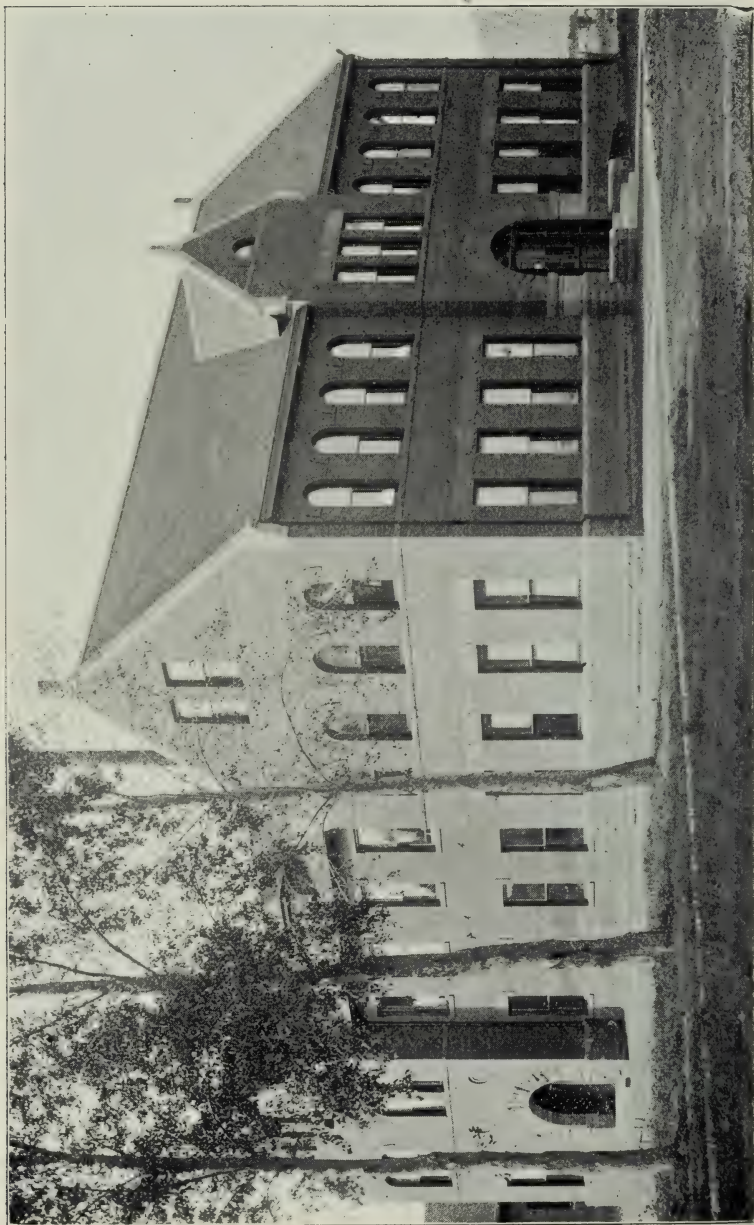
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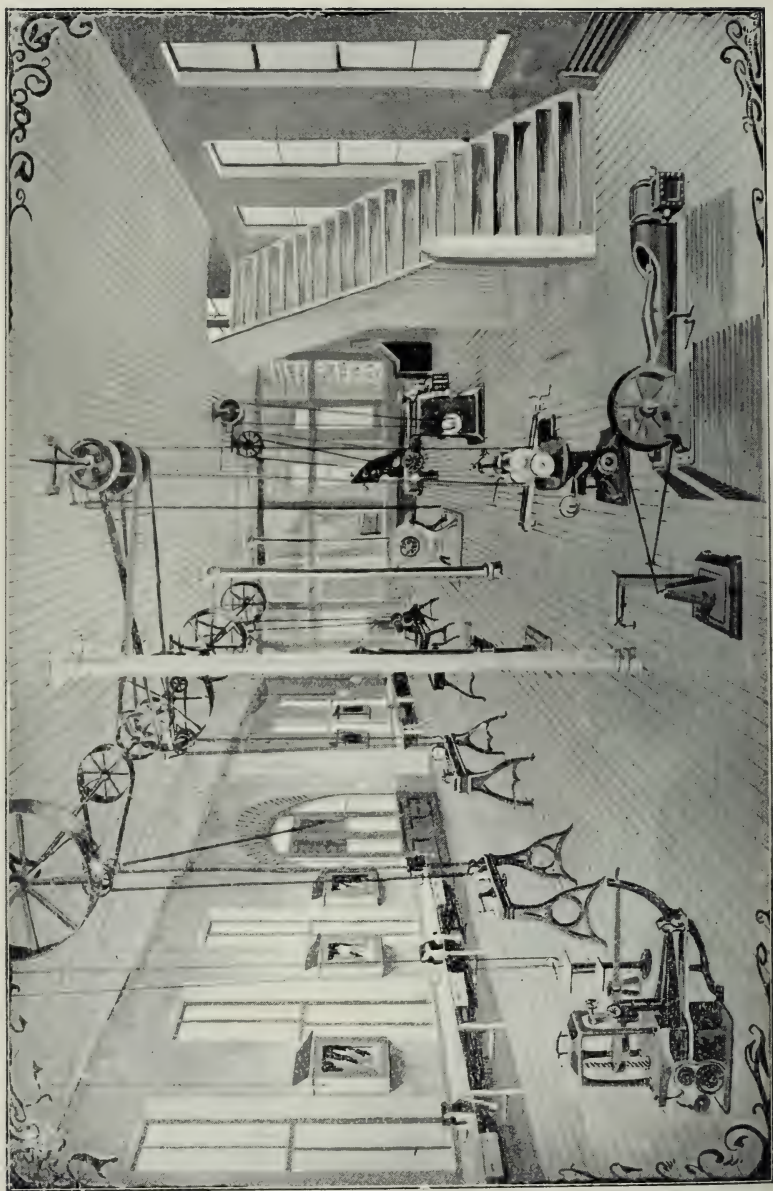
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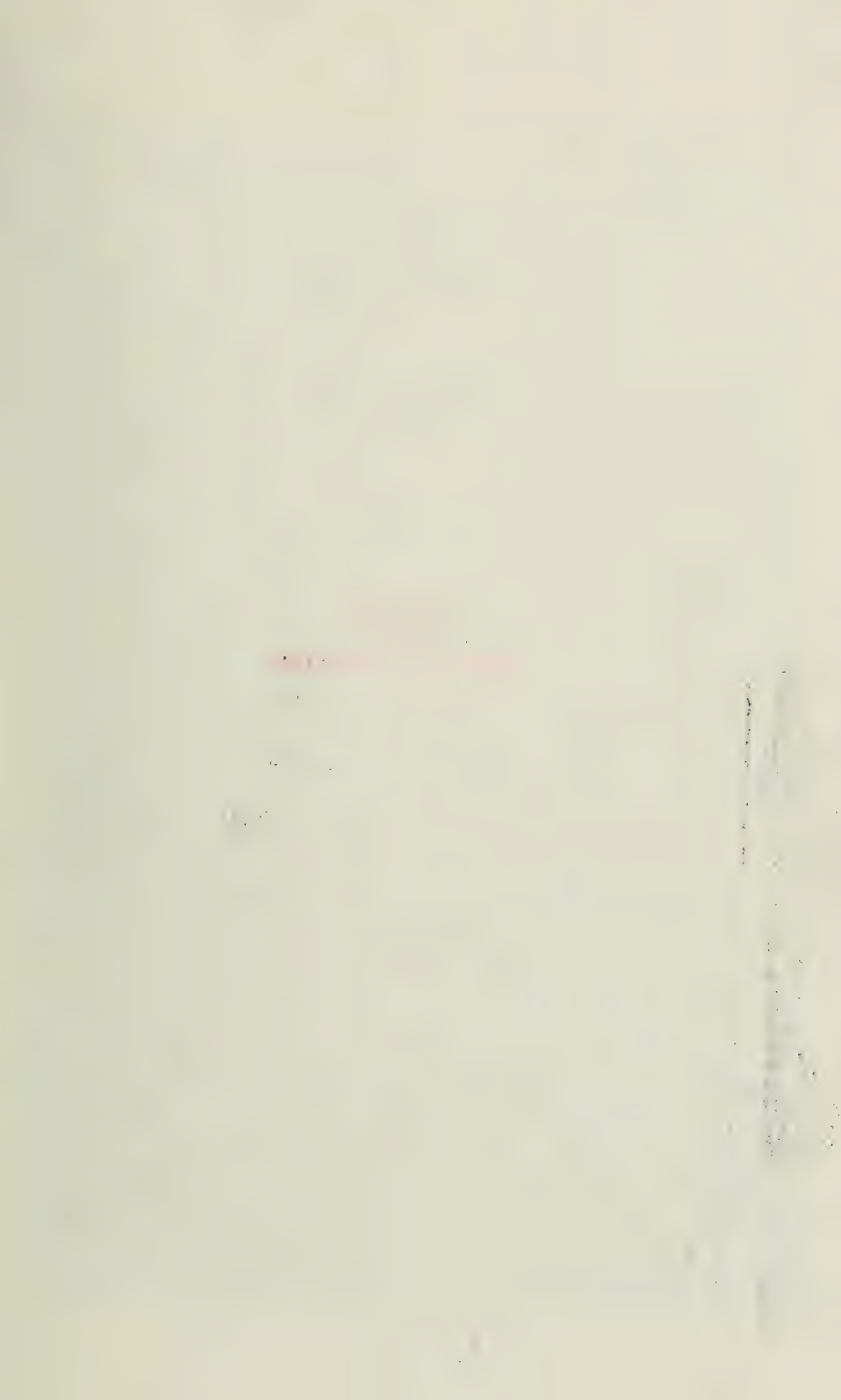
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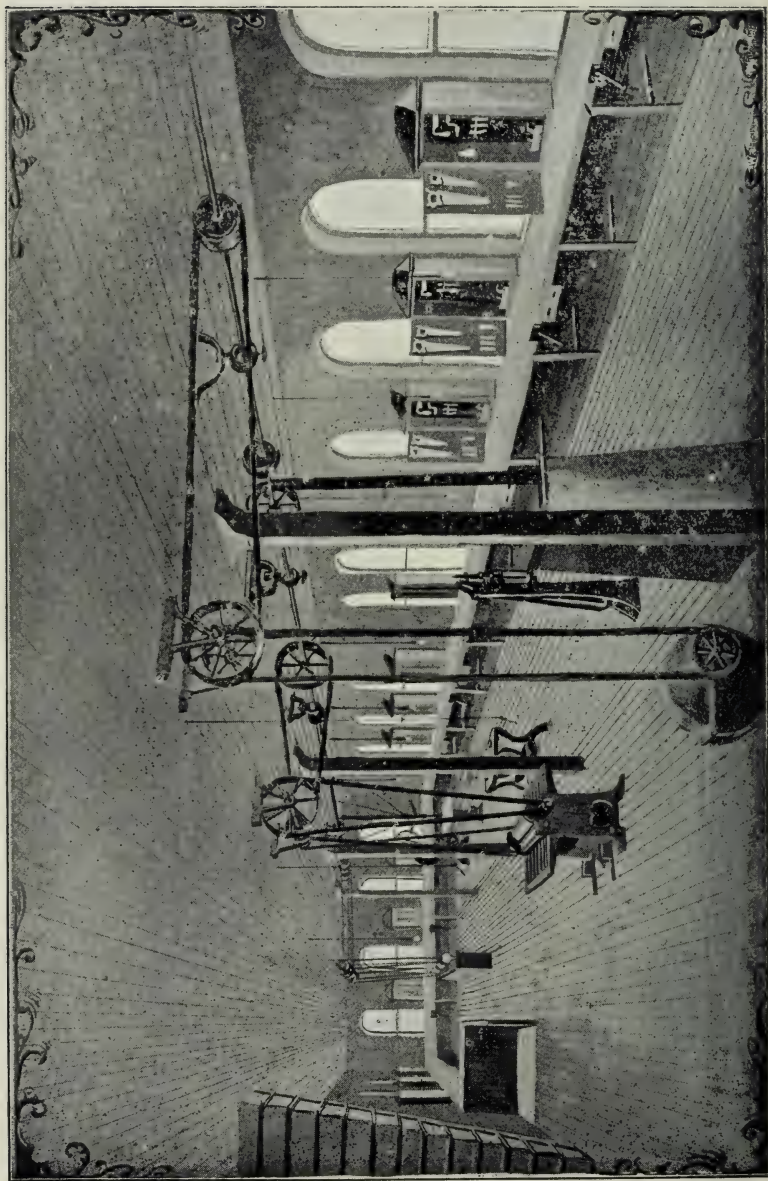


MECHANIC ARTS HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

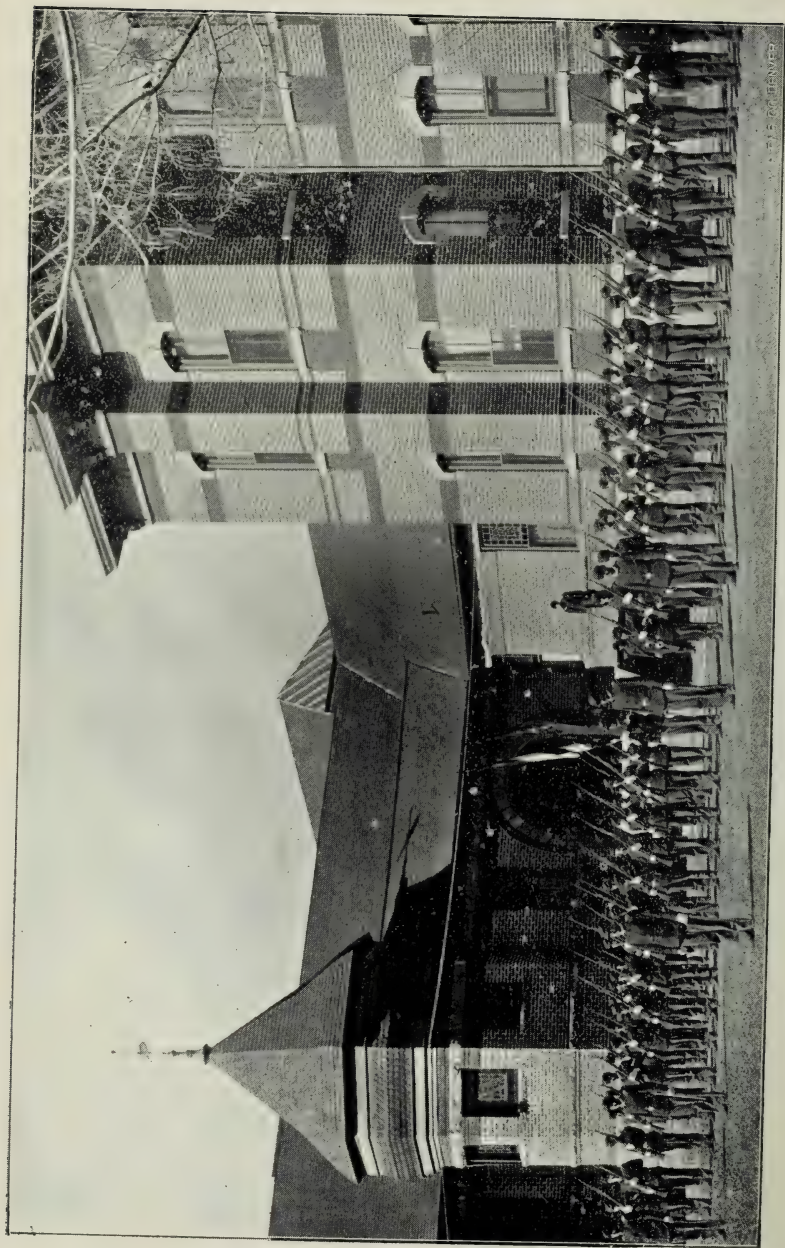


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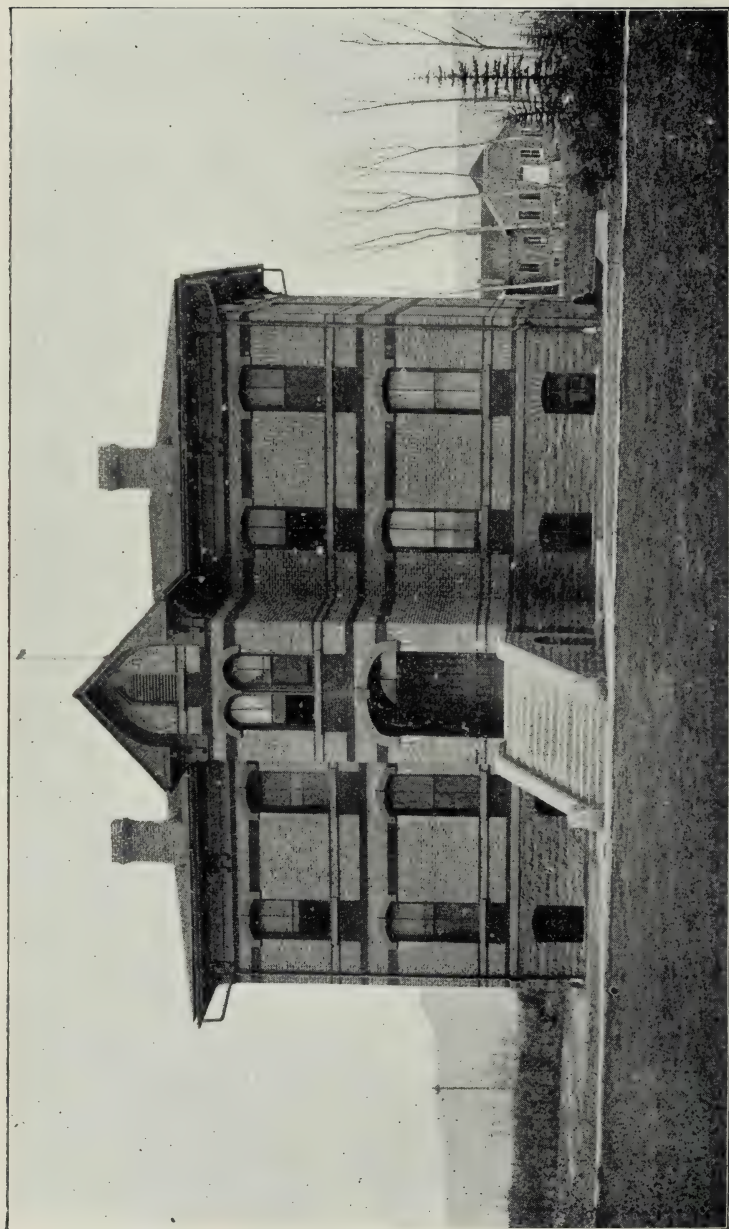




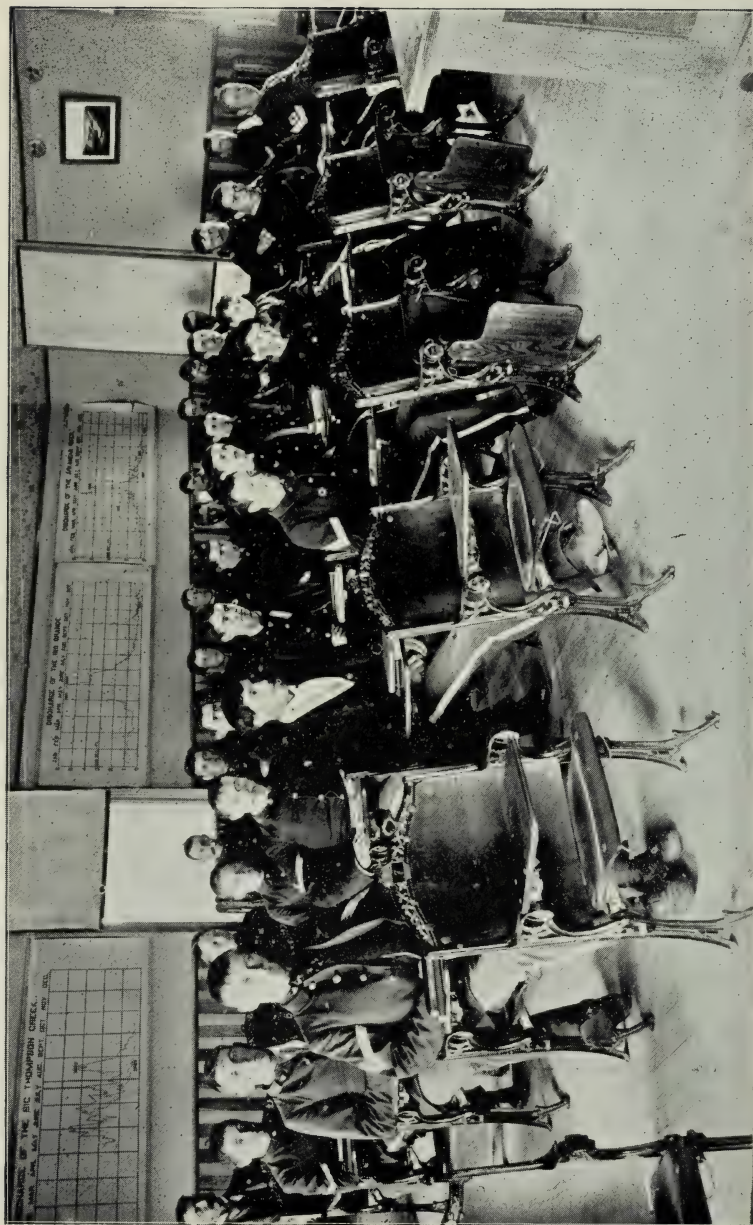
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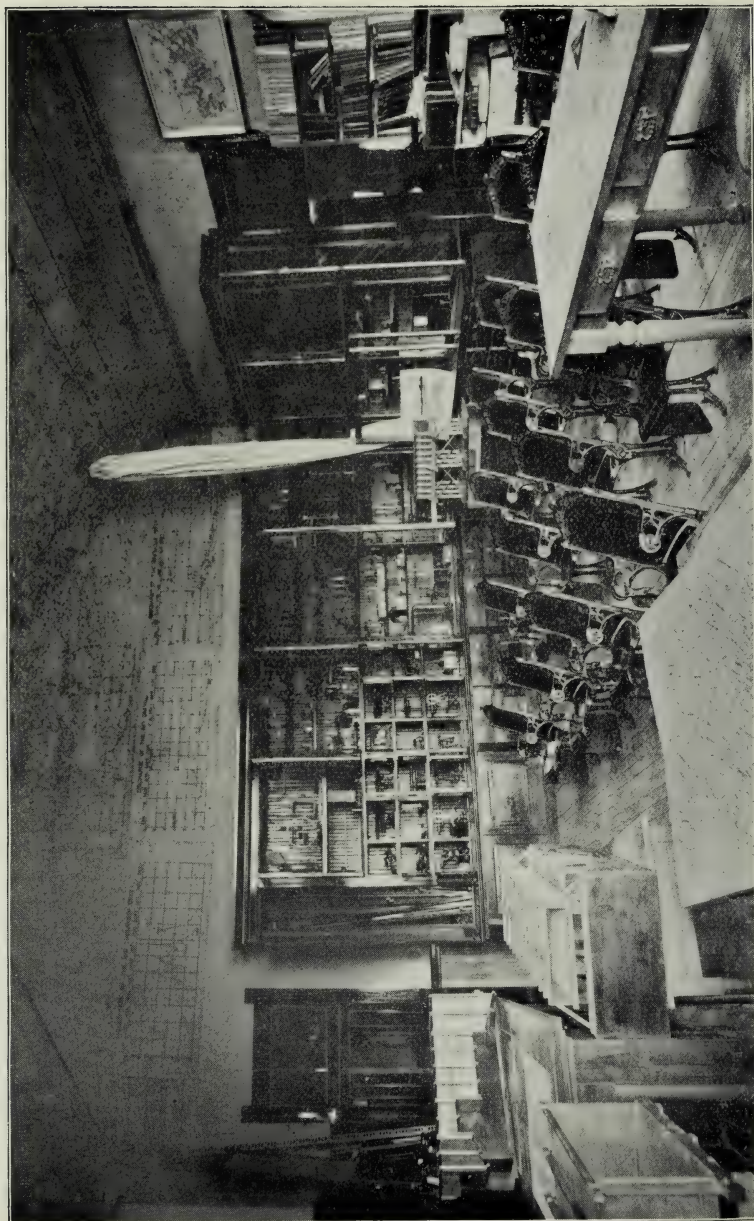
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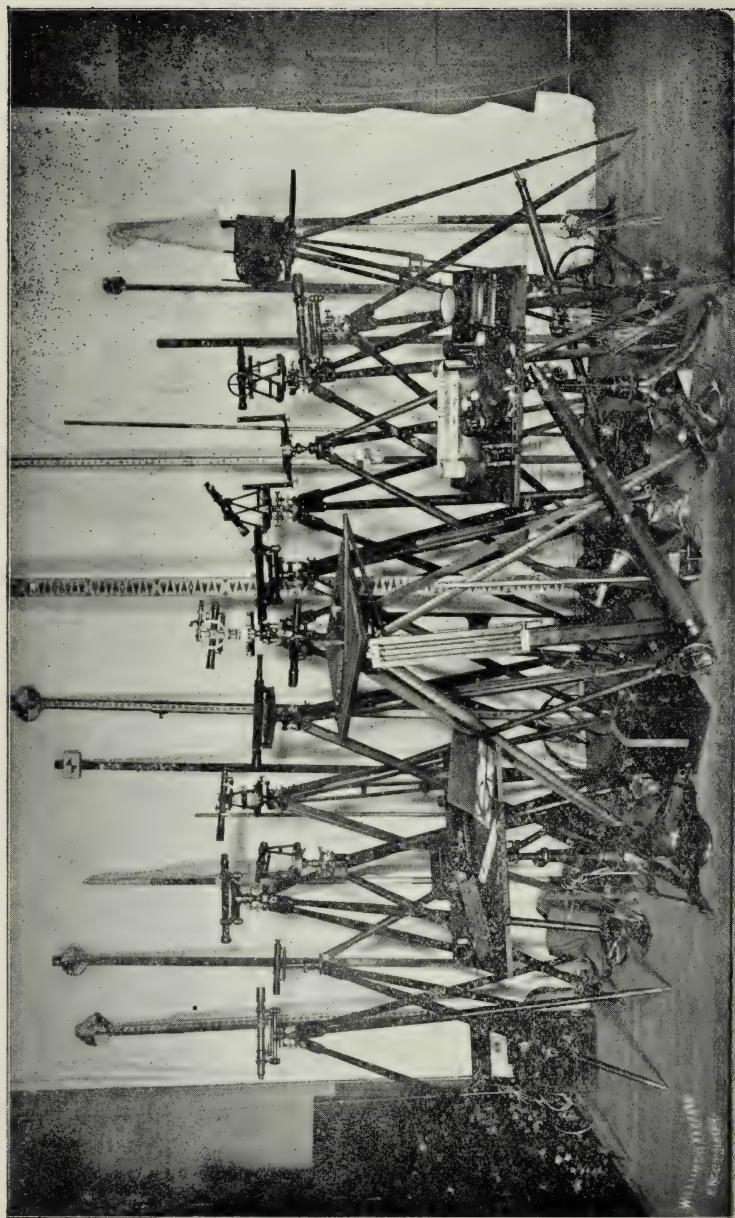
PHYSICS AND IRRIGATION ENGINEERING BUILDING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



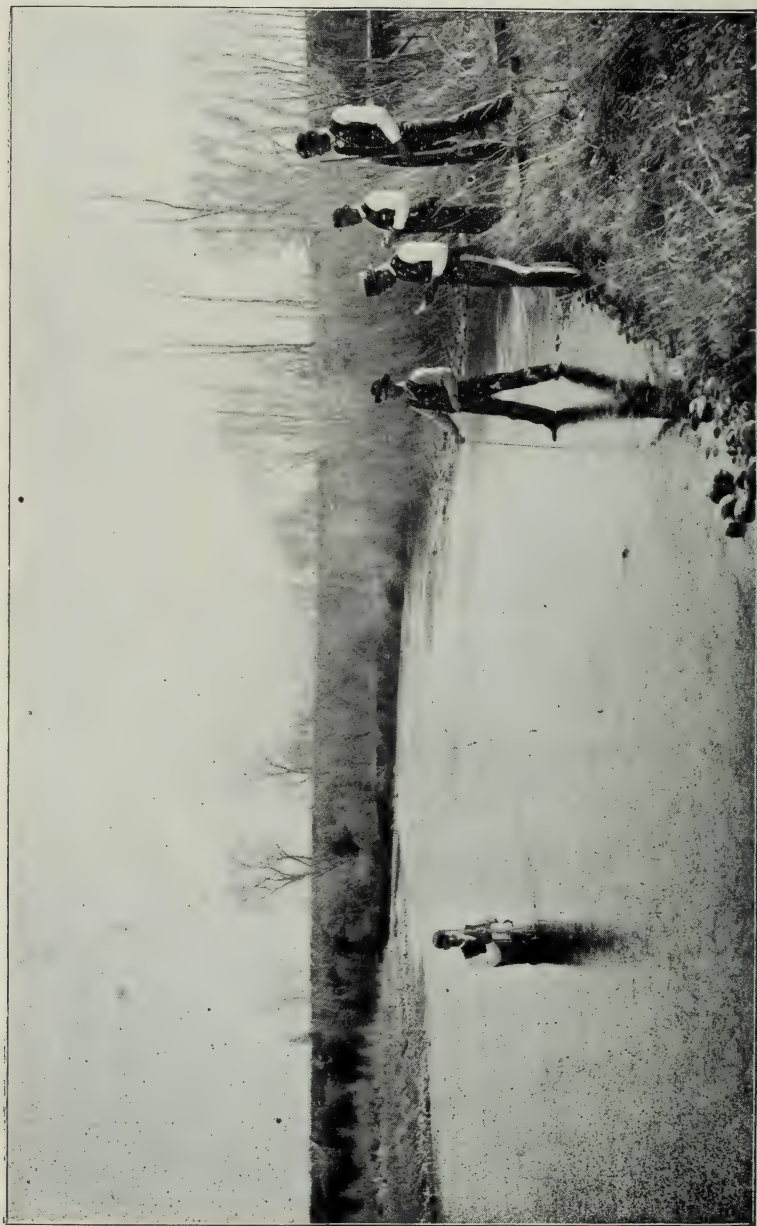
LECTURE ROOM AND CLASS, DEPARTMENT OF ENGINEERING AND PHYSICS, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



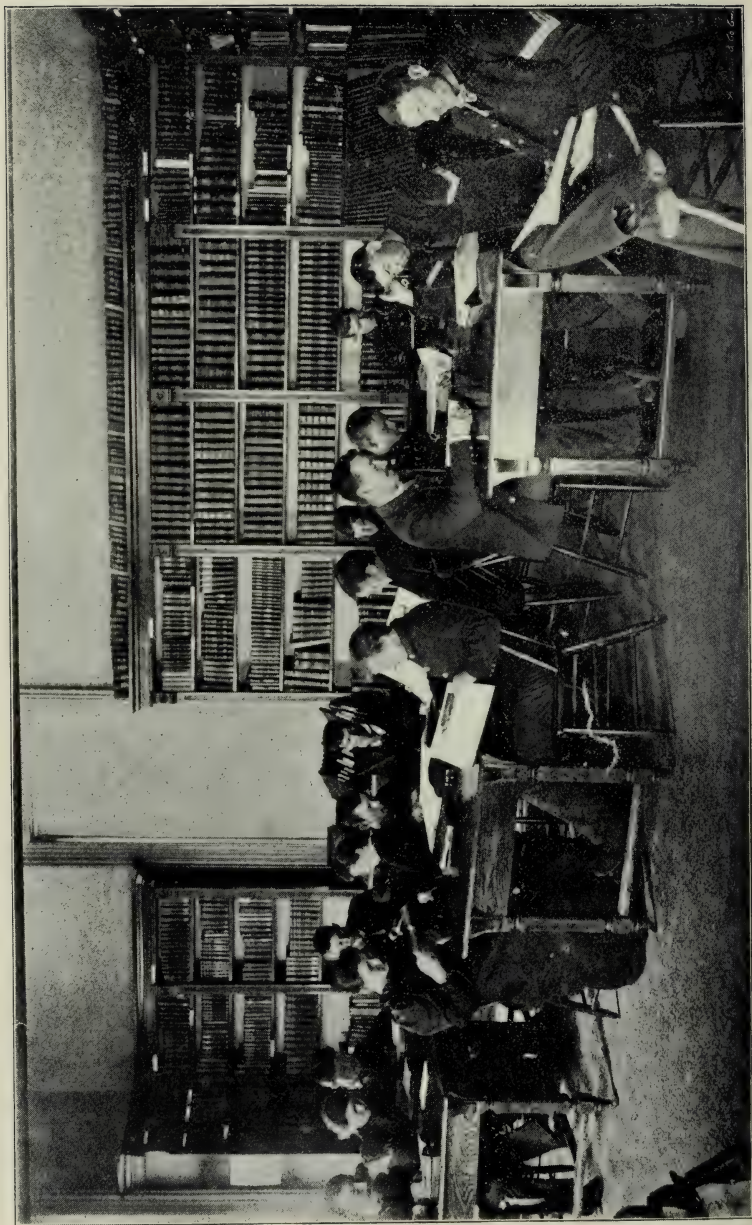
CLASS ROOM, PHYSICS AND ENGINEERING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



SURVEYING AND ENGINEERING INSTRUMENTS, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



EXERCISE IN GAUGING STREAMS, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



LIBRARY READING ROOM, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

CALENDAR.

1894-1895.

SEPTEMBER-1894.

S	M	T	W	T	F	S
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

OCTOBER-1894.

S	M	T	W	T	F	S
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

NOVEMBER-1894.

S	M	T	W	T	F	S
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	..

DECEMBER-1894.

S	M	T	W	T	F	S
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

JANUARY-1895.

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

FEBRUARY-1895.

S	M	T	W	T	F	S
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	..	..

MARCH-1895.

S	M	T	W	T	F	S
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

APRIL-1895.

S	M	T	W	T	F	S
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..

MAY-1895.

S	M	T	W	T	F	S
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

JUNE-1895.

S	M	T	W	T	F	S
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

JULY-1895.

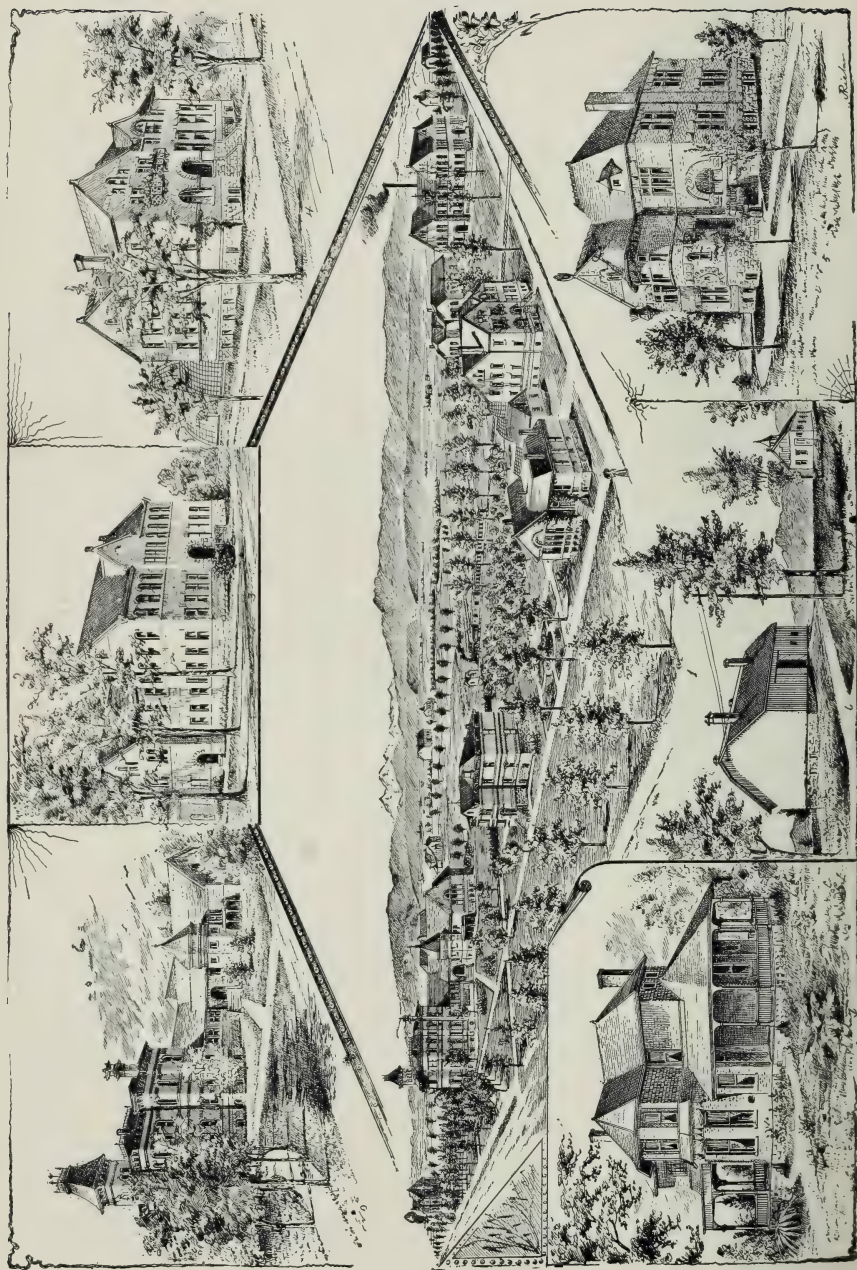
S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

AUGUST-1895.

S	M	T	W	T	F	S
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

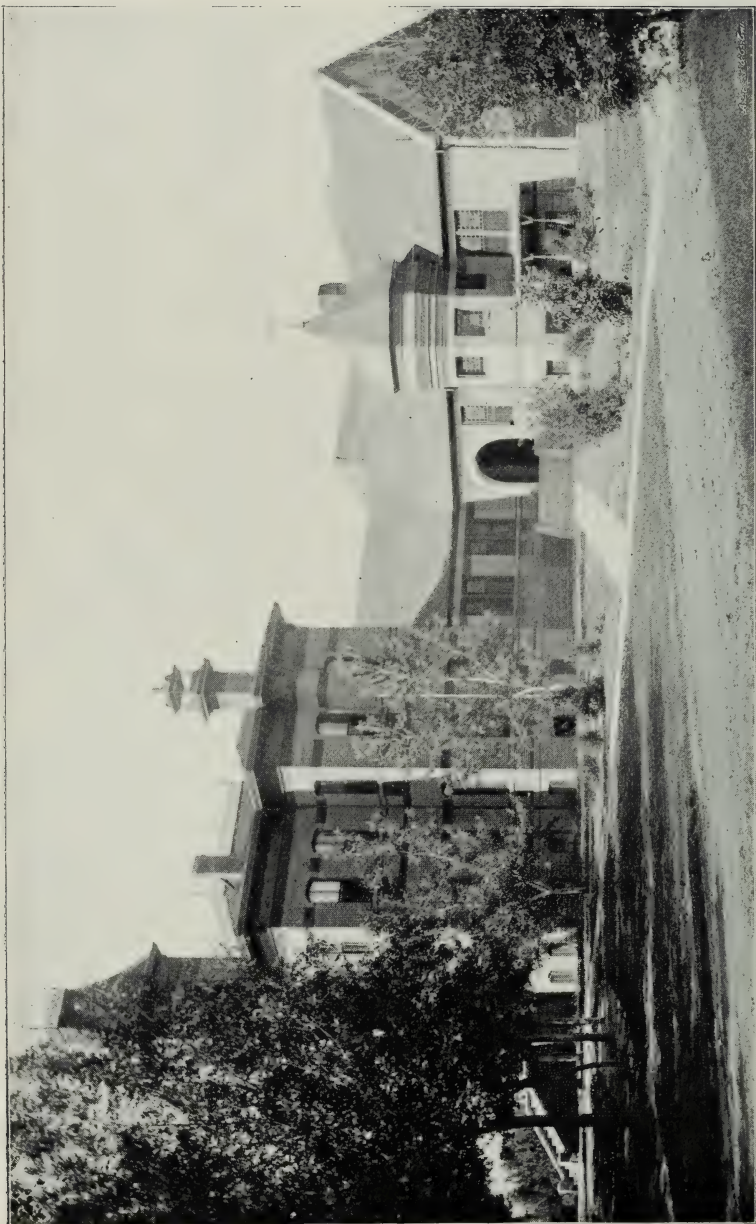
Table of Contents.

	PAGE.
State Board of Agriculture,.....	2
Officers and Committees,.....	3
Board of Instruction,.....	4
Officers of the Experiment Station,.....	5
Register of Students,.....	6
Summary,.....	12
Graduates,.....	13
Alumni Association,.....	15
Courses of Study and Labor,.....	16
Recitation and Labor Time-tables,.....	23
Departments of Instruction and Labor,.....	26
Agriculture,.....	26
Physiology,.....	30
Zoology,.....	31
Entomology,.....	31
Botany and Horticulture,.....	32
Chemistry and Geology,.....	35
History and Literature,.....	37
English and Stenography,.....	38
Mathematics,.....	39
Mechanical Engineering,.....	42
Military Science,.....	48
Physics and Irrigation Engineering,.....	49
Oratory,.....	53
Psychology, Logic, and Political Economy,.....	54
Civil Government,.....	55
Public Rhetoricals,.....	55
Degrees,.....	55
The Experiment Station,.....	56
The Library,.....	56
Literary Societies,.....	59
Conditions of Admission,.....	59
Examinations for Entrance,.....	60
Regular and Special Courses,.....	63
Leaving College,.....	64
Labor,.....	64
Discipline,.....	64
Grades in Work and Study,.....	64
Means for Instruction and Illustration,.....	65
Location,.....	70
History,.....	71
Report of Visiting Committee,.....	76
Calendar of Exercises,.....	80
Calendar, 1894-1895,.....	81
Table of Contents,.....	82



THE GROUNDS AND BUILDINGS OF THE STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.





MAIN BUILDING, STATE AGRICULTURAL COLLEGE, FORT COLLINS COLORADO.

REGISTER

OF THE

Officers and Students

OF

The State Agricultural College.

FORT COLLINS, COLORADO.

COURSES OF STUDY

AND

GENERAL INFORMATION.



1894-1895.

FORT COLLINS, COLO.:
PUBLISHED BY THE STATE AGRICULTURAL COLLEGE.
1895.

The State Board of Agriculture.

HON. JOHN J. RYAN,	- -	Fort Collins,	-	1897.
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HON. J. E. DuBOIS,	- - -	Fort Collins,	-	1899.
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HON. JAMES L. CHATFIELD,	-	Gypsum,	- -	1901.
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HON. ALVA ADAMS,	- -	Pueblo,	- - -	1903.
MRS ELIZA F. ROUTT,	- -	Denver,	- -	1903.
GOVERNOR ALBERT W. McINTIRE,	} <i>ex-officio.</i>			
PRESIDENT ALSTON ELLIS,				

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J. J. Ryan.		Alston Ellis.

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FARM AND STOCK.

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FACULTY AND COURSES OF STUDY.

A. L. Kellogg.	Alston Ellis.	Eliza F. Routt.
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J. L. Chatfield.	A. L. Kellogg.	J. E. DuBois.
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MECHANICS AND CHEMISTRY.

J. E. DuBois.	A. L. Emigh.	J. L. Chatfield.
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Professor of Zoology and Entomology.

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Professor of Mathematics.

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Professor of Agriculture.

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Professor of Chemistry and Geology.

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Professor of Military Science and Tactics.

MATTIE S. WULFJEN,

Instructor in Oratory and Physical Culture.

D. D. GAGE,

Instructor in Vocal Music.

LATHROP M. TAYLOR, B. S.,

Stenographer President's Office.

CELIA MAY SOUTHWORTH, B. S.,

Librarian.

ASSISTANTS.

FRANK L. WATROUS, *Agriculture.*

L. D. CRAIN, B. M. E., *Mechanical Engineering.*

J. D. STANNARD, B. S., *Physics and Irrigation Engineering.*

CARL F. BAKER, B. S., *Zoology and Entomology.*

CHARLES J. RYAN, *Chemistry.*

MARION J. HUFFINGTON, *Horticulture.*

CORYDON A. WOODY, B. S., *English and Mathematics.*

ROBERT E. TRIMBLE, B. S., *Meteorology.*

EDWARD McCABE, *Florist.*

THE STATE EXPERIMENT STATION.

BOARD OF CONTROL :

THE STATE BOARD OF AGRICULTURE.

EXECUTIVE COMMITTEE IN CHARGE.

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J. J. RYAN. J. E. DUBOIS. ALSTON ELLIS.

STATION COUNCIL.

ALSTON ELLIS, A. M., PH. D., LL.D.,
PRESIDENT AND DIRECTOR.
WELLS W. COOKE, B. S., A. M., - AGRICULTURIST.
C. S. CRANDALL, M. S., HORTICULTURIST AND BOTANIST.
WILLIAM P. HEADDEN, A. M., PH. D., - CHEMIST.
L. G. CARPENTER, M. S., - -
METEOROLOGIST AND IRRIGATION ENGINEER,
C. P. GILLETTE, M. S., - - - ENTOMOLOGIST.
DANIEL W. WORKING, B. S., - - - SECRETARY.
LATHROP M. TAYLOR, B. S., STENOGRAPHER.

ASSISTANTS.

FRANK L. WATROUS, - - - AGRICULTURIST.
M. J. HUFFINGTON, - - - HORTICULTURIST.
CHARLES J. RYAN, - - - CHEMIST.
CARL F. BAKER, B. S., - - - ENTOMOLOGIST.
R. E. TRIMBLE, B. S., - - -
METEOROLOGIST AND IRRIGATION ENGINEER.

SUB-STATIONS.

F. A. HUNTLEY, B. S. A., SUPERINTENDENT,
Arkansas Valley Station, Rocky Ford, Colorado.
J. H. McCLELLAND, SUPERINTENDENT,
Divide Station, Monument, Colorado.
CHAS. A. DUNCAN, B. S., SUPERINTENDENT,
San Luis Valley Station, Monte Vista, Colorado.
J. B. ROBERTSON, SUPERINTENDENT,
Rain-Belt Station, Cheyenne Wells, Colorado.

Register of Students.

1894-1895.

Post Graduates.

Philo Kneeland Blinn, B. S., '94, . . .	Berthoud,	Colorado
Jacob Hover Cowen, B. S., '94, ...	Hotchkiss,	"
Minnie Frances Harrington, B. S., '94, . . .	Fort Collins,	"
Porter Johnston Preston, B. S., '92, . .	Longmont,	"
Herbert Salter Kendall, B. S., '94, . . .	Laramie,	Wyoming
William John Ralph, B. S., '93, ...	Fort Collins,	Colorado
Celia May Southworth, B. S., '94, . . .	Denver,	"
Raymond F. Walter, B. S., '93, ...	Fort Collins,	"

Senior Class.

Jean Bart Balcomb, ...	Success,	Kansas
Herbert Andrew Black, ...	Fort Collins,	Colorado
Edith Gertrude Boothroyd, ...	Arkins,	"
Henry Alvin Calkins, ...	Harris,	"
Edward Percy Cooke, ...	Dowagiac,	Michigan
Loren Bradley Curtis, ...	Littleton,	Colorado
William Franklin Gilkison, ...	Fort Collins,	"
Ella Gertrude Goldsborough, ...	" " "	"
Seth Curtis Lewis, ...	Timnath,	"
Edgar Avery Mead, ...	Greeley,	"
George William Nelson, ...	Denver,	"
Frances Christina Schelt, ...	Fort Collins,	"
Walter Kolb Starbird, ...	Denver,	"

Junior Class.

Fred Alford,.....	Fort Collins, Colorado
Henry Franklin Alps,.....	Loveland, “
Ninette Evans Baker,.....	Fort Collins, “
William Erastus Becker,.....	Dowagiac, Michigan
George Bloomfield,.....	Meeker, Colorado
Florence Jessie Boothroyd,.....	Arkins, “
Alfred Hiram Bungardt,.....	Kansas City, Missouri
Allen Percy Greenacre,.....	Fort Collins, Colorado
Robinson Wilbur Hawley,.....	“ “ “
Herman Howard,.....	Greeley, “
John Edward Kiteley,.....	Longmont, “
Richard Appleton Maxfield,.....	Rifle, “
Abner Sherman McKee,.....	Paonia, “
Grafton St. Clair Norman,.....	Hamilton, Ohio
Olof Wallfred Nyberg,.....	Pueblo, Colorado
Smith Durie Philip,.....	Fort Lupton, “
Robert Winfred Sears,.....	Greenhorn, “

Sophomore Class.

Emil Affolter,.....	Longmont, Colorado
Frank Affolter,.....	“ “
Mabel Carrie Blinn,.....	Berthoud, “
May Anna Dievendorf,.....	Buena Vista, “
Percy Golding-Dwyre,.....	Fort Collins, “
Bertram Alden Gage,.....	“ “ “
Martha Rose Gilkison,.....	“ “ “
Jesse Walter Goodwin,.....	Loveland, “
Robert Secrest Gray,.....	Wheatland, Wyoming
Archie Jesse Harris,.....	Fort Collins, Colorado
Anna Belle Hawkins,.....	Berthoud, “
Ralph Henry Hess,.....	Fort Collins, “
William Ashton Hilton,.....	“ “ “
Oliver Justice Horner,.....	“ “ “

Edward Marion Jacobson, ...	Livermore,	Colorado
Alta Esther Lewis, ...	Timnath,	"
James Mifflin Loud, ...	Fort Robinson,	Nebraska
Julia Myrtle Meteer, ...	Buena Vista,	Colorado
Perry Hjalmer Nyberg, ...	Pueblo,	"
Anna Laura Picken, ...	Fort Collins,	"
Mary Elizabeth Prendergast, ...	" "	"
Olin Grafton Reed, ...	" "	"
David John Richards, ...	Salida,	"
Alice Etheleen Silcott, ...	Fort Collins,	"
Charles Eugene Towner, ...	" "	"
Robert Newton Underwood, ...	Hotchkiss,	"
William Lewis Wade, ...	Paonia,	"
Harry Osborn Wade, ...	Buena Vista,	"
Thomas Jefferson Warren, ...	Fort Collins,	"
Hoyt Douglas Whipple, ...	Berthoud,	"
Helen Tenny Willard, ...	Fort Collins,	"

Freshman Class and Irregulars.

Mary Affolter, ...	Longmont,	Colorado
Lore Edward Alford, ...	Fort Collins,	Colorado
Albert William Ambrook, ...	Boulder,	"
Claude Harold Annis, ...	Fort Collins,	"
Lauren Forrest Bacon, ...	Longmont,	"
Ray Jasper Baker, ...	Fort Collins,	"
Oscar Kibbie Barnes, ...	" "	"
Walter Huett Beach, ...	" "	"
Paul Blake Benson, ...	Denver,	"
John Morris Bernheim, ...	Fort Collins,	"
John Jay Blinn, ...	Berthoud,	"
Philip Henry Boothroyd, ...	Arkins,	"
Harry Alexander Boyd, ...	Harris,	"
Bertha Vivien Brooks, ...	Portland,	Michigan
Hiram Albert Brown, ...	Harris,	Colorado

Herman Overton Brown, ...	Salida,	Colorado
Calla Davis Bullard, ...	Fort Collins,	"
Carl Sperry Bungardt, ...	Kansas City,	Missouri
Arthur White Bush, ...	Boulder,	Colorado
Richard Turner Calkins, ...	Harris,	"
Raymond Clinton Calloway, ...	Livermore,	"
Booker Bowman Case, ...	La Porte,	"
Frank Corbin, ...	Fort Collins,	"
Eva May Daugherty, ...	" "	"
Charles Omer Day, ...	Boulder,	"
Walter George Decker, ...	Fort Collins,	"
William Arnett Dickens, ...	Longmont,	"
Myrna May Dix, ...	Fort Collins,	"
Dudley Golding-Dwyre, ...	" "	"
Charles Roy Emigh, ...	" "	"
Grace Farrar, ...	" "	"
Raymond Ranney Fiske, ...	" "	"
Josephine Iona Fiske, ...	" "	"
Mark Hudson Flinn, ...	Loveland,	"
Milton Charles Garrett, ...	Fort Collins,	Colorado
William Franklin Godsmark, ...	Hot Sulph'r Sp'gs,	"
Elmer Louis Hahn, ...	New Windsor,	"
Harry George Hammond, ...	Fort Collins,	"
David Cyrus Harned, ...	Livermore,	"
Agnes Louise Hawley, ...	Fort Collins,	"
Walter Arthur Hawthorne, ...	Salida,	"
Clairette Ella Herner, ...	Fort Collins,	"
Mabel Herner, ...	" "	"
Robert Martin Herrington, ...	" "	"
Joseph Clinton Holtschneider, ...	Buena Vista,	"
Jacob Edward Horner, ...	Fort Collins,	"
George Arthur Hotchkiss, ...	Colone,	"
Charles Mantz Hottel, ...	Fort Collins,	"
Minerva Huberty, ...	" "	"
Wayne Burdette Hunt, ...	Kansas City,	Missouri

Elizabeth Ellen Ish, ...	Fort Collins, Colorado	
Le Roy Courtney Johnson, ...	Fort Morgan,	"
Roy Pitkin Kellogg, ...	Salida,	"
Stephen Goodwin Lewis, ...	Timnath,	"
Adolph Frederick Lindon, ...	Bryant,	"
Andrew McFarlane, ...	Hebron,	"
Herbert S. Martin, ...	Alamosa,	"
Robert Lee McConnell, ...	La Veta,	"
John Logie McPherson, ...	Fort Collins,	"
Harry Glenn Meredith, ...	Rye,	"
Lily May Miller, ...	Fort Collins,	"
Harry Clifford Miller, ...	Hotchkiss,	"
Jessie Salenia Moore, ...	Fort Collins,	"
Lena May Morrison, ...	" " "	"
Elizabeth Mumper, ...	Greeley,	"
Alexander Mathews Peterson, ...	Hancock,	Nebraska
Frank R. Piatt, ...	Fort Collins,	Colorado
George Darald Pratt, ...	" " "	"
Bernard Joseph Prendergast, ...	" " "	"
Helene Jeanette Rhodes, ...	Ogden,	Utah
George Henry Rist, ...	Loveland,	Colorado
Henry Curtis Russell, ...	Palmer Lake,	"
Linnie May Rutledge, ...	Timnath,	"
David Severance, ...	Greeley,	"
George Augustus Smith, ...	Orchard,	"
John Havener Southard, ...	Denver,	"
George Washington Springer, ...	New Windsor,	"
Ross Courtney Stephenson, ...	Fort Collins,	"
Lura Elizabeth Strever, ...	Berthoud,	"
William J. Strever, ...	"	"
Charles Dell Strever, ...	"	"
Elizabeth Francis Sullivan, ...	Salida,	"
Charles Edward Swann, ...	Delta,	"
Mary Ellen Sweeney, ...	Fort Collins,	"
Hiram Hubert Tannar, ...	" " "	"

Mary J. Thomas,.....	Salida,	Colorado
John Patrick Thomson,.....	New Windsor,	"
Rennie Simpson True,.....	Highland Lake,	"
Albert Ezra Upton,.....	Montrose,	"
Frank Thurston Woods,.....	Fort Collins,	"
Floyd Stephens Youtsey,.....	" "	"

Preparatory Class.

Mary Elizabeth Akers,.....	Fort Collins,	Colorado
Carl Andrew Anderson,.....	Sheldahl,	Iowa
Frank Bear,.....	Salida,	Colorado
Carroll Calvert Bennett,.....	Rawlins,	Wyoming
Lee Blackstock,.....	Bellvue,	Colorado
La Veta Branson,.....	Loveland,	"
Frederick William Brose,.....	Fort Collins,	"
Pearl Almira Burnett,.....	" "	"
Maggie Leon Buttorff,.....	" "	"
Maude Eliza Clark,.....	New Windsor,	"
Robert Rolla Cooper,.....	Fort Collins,	"
Frank Francisco Cox,.....	Salida,	"
John Lee Dale,.....	Fort Collins,	"
Rose Nell Daugherty,.....	" "	"
Martha Anna Davis,.....	Timnath,	"
Eva Davis,.....	"	"
May Agatha Deaver,.....	Fort Collins,	"
Francis Henry Droney,.....	Salida,	"
Frank Gallup,.....	Pueblo,	"
Harriet Jennie Garrett,.....	Fort Collins,	"
George Edgar Greenacre,.....	" "	"
Charles Haff,.....	Fort Morgan,	"
Altie May Harrington,.....	Fort Collins,	"
Oliver Weston Jewett,.....	Akron,	"
Fred Jewett,.....	Denver,	"
George Franklin Kern,.....	New Windsor,	"
Emma Elizabeth Kern,.....	" "	"

George Wilbur Kimmey,.....	Higbo,	Colorado
Benjamin William Lamb,....	Fort Collins,	"
John Clarence Lines,.....	Platteville,	"
Charles Lowell,.....	Denver,	"
Jessie Josephine Loomis,.....	Fort Collins,	"
Jasper Loomis,.....	" "	"
Newton Webster Matthews,.....	Longmont,	"
Walter Willis McCain,....	Fort Collins,	"
Arthur William McCain,.....	" "	"
Catharine Agnes McKenny,.....	Ford City,	Missouri
Frank Miller,.....	Fort Collins,	Colorado
Benjamin Robertson Mitchell,....	Alamosa,	"
Orie Le Roy Moon,.....	Fort Collins,	"
Belle Morrison,.....	" "	"
Murdoch Grant Nelson,.....	" "	"
Robert Bass Newitt,.....	Garo,	"
Thorwald Vifold Norgaard,.....	Gypsum,	"
Signe Agneta Norgaard.....	"	"
Lucy Ella O'Rourke,....	Ford City,	Missouri
Charles Eugene Parsons,....	Fort Collins,	Colorado
Robert Lee Payne,.....	" "	"
James Pullar,.....	" "	"
Bert Ralph,.....	" "	"
Robert Glenn Reed,.....	Kansas City,	Missouri
Mary Eloise Reid,.....	Railway,	New Jersey
Roy Ross Roney,.....	Salida,	Colorado
William Leonard Ryan,....	Fort Collins,	"
Fred La Rue Seaman,.....	Axtell,	Kansas
Walter Edison Shull,....	Berthoud,	Colorado
Gwendolen Silcott,.....	Fort Collins,	"
Ella Bell Smith,.....	Marysville,	Missouri
Elsie Snow,.....	Fort Collins,	Colorado
Ralph Jefferson Stephenson,....	" "	"
Lillie May Thomas,.....	" "	"
William George Wixson,.....	Alamosa,	"

Special Students.

Cora Bell Davis, ...	Leadville,	Colorado
Isabel Margaret Furnidge, ...	Rochester,	New York
Fonger de Haan, ...	Amsterdam,	Netherlands
Rose Margaret Lee, ...	Fort Collins,	Colorado
Ella Avery Mead, ...	Greeley,	"
Emma Sykes Stover, ...	Fort Collins,	Colorado
Davy Vance Sickman, ...	" "	"
Edward Sharpe Gage Titus, ...	Ottawa,	Kansas

Summary.*

	Males.	Females.	Total.
Post Graduates, ...	6	2	8
Senior Class, ...	10	3	13
Junior Class, ...	15	2	17
Sophomore Class, ...	21	10	31
Freshman Class and Irregulars, ...	69	22	91
Preparatory Class, ...	40	22	62
Special Students, ...	3	5	8
Total, ...	164	66	230

*This summary does not include the names of three hundred students, male and female, registered for work in the Short Course in Agriculture, which closed February 1st, 1895, after an interesting and a profitable term of four weeks.

GRADUATES.

1884.

George H. Glover, B. S., D. V. M., Veterinary Surgeon,..... Denver, Colorado
Elizabeth Lawrence, B. S., *nee* Coy, at Home, Fort Collins, “
Leonidas Loomis, B. S., Stockman,..... “ “ “

1885.

Cora B. Blinn, B. S., Stenographer,..... Lincoln, Nebraska
Edna L. Hice, B. S., Teacher,..... Fort Collins, Colorado
Lelia L. Robertson, B. S., *nee* Loomis, at Home, “ “ “
Grace Espy Patton, B. S., Professor of English and Stenography, State Agricultural College,.... Fort Collins, Colorado
Robert E. Trimble, B. S., Assistant Meteorologist, State Experiment Station,..... Fort Collins, Colorado
Helen Rigden, B. S., *nee* White, at Home,.... “ “ “

1886.

Wilbert J. Sickman, B. S., Clerk of the District Court,..... Fort Collins, Colorado

1887.

Eleanor F. Gill, B. S., at Home..... Fort Collins, Colorado
Daisy E. Stratton, B. S., Teacher,..... “ “ “
Lerah S. McHugh, B. S., *nee* Stratton, at Home, “ “ “
Edwin G. Nettleton, B. S., Merchant,.... Nampa, Idaho

1888.

Lewis A. Coffin, B. S., Farmer,..... Boise City, Idaho
Harvey H. Griffin, B. S., Superintendent Experiment Station,..... Aztec, New Mexico
Josephine Lee, B. S., Teacher, City Schools,.... Boulder, Colorado
Genevieve E. McLain, B. S., Teacher, State Normal School,..... Peru, Nebraska

1889.

Lucy Benson, B. S., *nee* Bell, at Home,.... Loveland, Colorado
Arthur L. Davis, B. S., Physician,..... Arvada, “

1890.

Clarence V. Benson, B. S., LL. B., Attorney-at-Law,..... Loveland, Colorado
Velma B. Beebe, B. S., *nee* Benson, at Home,.... “ “
Burt C. Buffum, M. S., Professor of Botany and Horticulture, State University,..... Laramie, Wyoming

Charles A. Duncan, B. S., Superintendent, San Luis Valley
Experiment Station,.....Monte Vista, Colorado
Newton C. Garbutt, B. S., Attorney-at-Law,....Fort Collins, "
Helen E. Lunn, B. S., Book-Keeper,....." "
Harry R. Temple, B. S., Merchant,.....Boulder, "
Cora B. Thoman, B. S., Teacher City Schools,....Loveland, "
Mary L. Weaver, B. S., B. Ph., at Home,.....Urbana, Ohio

1891.

Charles R. Evans, B. S., Merchant,.....Fort Collins, Colorado
Minnie E. McLain, B. S., Teacher, Public Schools, La Fayette, "
John S. Calkins, B. S., Farmer,.....Harris, "

1892.

Charles W. Beach, B. S., Student, State Univer-
sity,.....Champaign, Illinois
Frank Beach, B. S., Student, State University....Lincoln, Nebraska
Alice Bell, B. S., Stenographer and Teacher, ..Fort Collins, Colorado
Samuel Bell, B. S., Medical Student,.....Denver, "
Don A. Carpenter, B. S., Law Student,....." "
Porter J. Preston, B. S., State Engineer's Office,...." "
Albert J. Sedgwick, B. S., Merchant,....." "
Lewis L. Stimson, B. S., Merchant and Surveyor, ..Greeley, "
Frank H. Thompson, B. S., Merchant and Surveyor. " "

1893.

John Bloomfield, B. S., Superintendent Phyllis Canal, Nampa, Idaho
Samuel L. Boothroyd, B. S., Student, Chicago Uni-
versity,.....Chicago, Illinois
Charles J. Gilkison, B. S., Law Student,.....Fort Collins, Colorado
*Ida M. Douglass, B. S., *nee* Lewis,.....Timnath, "
William J. Ralph, B. S., Druggist,.....Fort Collins, "
Raymond F. Walter, B. S., Surveyor,....." "
William W. Williard, B. S., Surveyor,.....Phoenix, Arizona

1894.

Philo K. Blinn, B. S., Assistant, Farm Department,
State Agricultural College,.....Fort Collins, Colorado
Jacob H. Cowen, B. S., Post-Graduate,....." "
Will H. Fairfield, B. S., Clerk, D. & R. G. R. R.,....Denver, "
Minnie F. Harrington, B. S., Post-Graduate, ..Fort Collins, "
Herbert S. Kendall, B. S., Assistant, Wyoming Experi-
ment Station,.....Laramie, Wyoming
Celia May Southworth, B. S., Librarian, State Agricultural
College,.....Fort Collins, Colorado
Harlan Thomas, B. S., Architect,.....Denver, "

*Deceased.

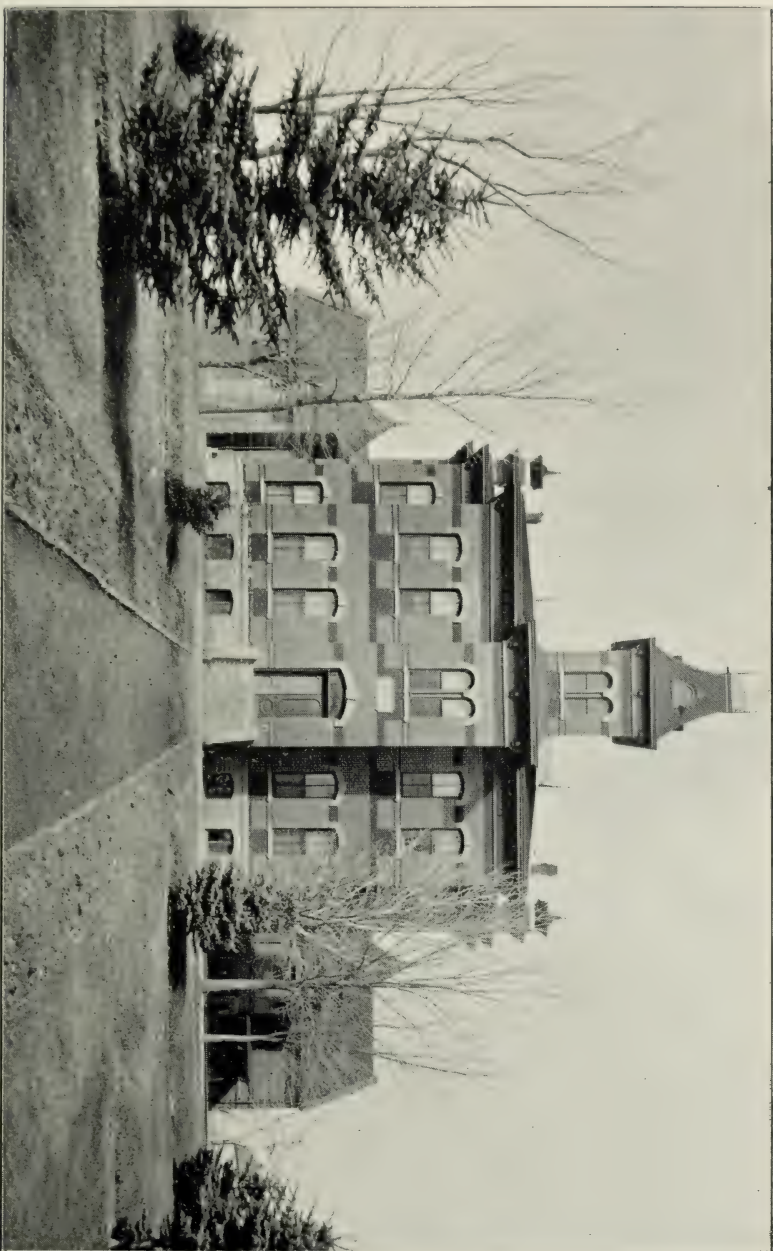
ALUMNI ASSOCIATION.

OFFICERS:

PRESIDENT,	-	-	-	-	NEWTON C. GARBUTT
VICE-PRESIDENT,	-	-	-	-	BURT C. BUFFUM
SECRETARY,	-	-	-	-	CELIA MAY SOUTHWORTH
TREASURER,	-	-	-	-	RAYMOND F. WALTER

EXECUTIVE COMMITTEE.

PRESIDENT.	VICE-PRESIDENT.	SECRETARY.
GRACE ESPY PATTON.	JACOB H. COWEN.	



MAIN BUILDING, FRONT VIEW, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

COURSES OF STUDY.

Preparatory Year.

FIRST TERM.

Arithmetic.....	Wentworth
United States History.....	Montgomery
English Analysis and Composition.....	Reed and Kellogg
Drawing.....	Free-hand

Labor: Farm.

SECOND TERM.

Arithmetic.....	Wentworth
United States History.....	Montgomery
English Analysis and Composition.....	Reed and Kellogg
Drawing.....	Free-hand

Labor: Shop.

THIRD TERM.

Arithmetic.....	Wentworth
Civil Government.....	Townsend's Shorter Course
Word Analysis and Composition.....	Swinton
Drawing.....	Free-hand

Labor: { Shop, two weeks.
 } Garden, nine weeks.

Military Drill and Physical Culture daily. Rhetorical work two afternoons per week. Readings from American Men of Letters three afternoons per week.

The Course from this point is separated into:

1. The Agricultural Course.
2. The Mechanical Engineering Course.
3. The Irrigation Engineering Course.
4. The Ladies' Course.

All lead to the degree of Bachelor of Science.

Freshman Year.

FIRST TERM.

Algebra	Taylor
Composition and Rhetoric	Lockwood
Botany	Gray's Lessons
History	Sheldon

Labor : $\left\{ \begin{array}{l} \text{Garden, A., I.} \\ \text{Shop, M.} \end{array} \right.$

SECOND TERM.

Plane Geometry	Meyers
History	Sheldon
Drawing	Instrumental
Agriculture, A., I., L.	Gulley
Carpentry and Joinery, M.	Goss

Labor : Shop, A., I., M.

THIRD TERM.

History	Sheldon
Drawing	Instrumental
Botany	Gray, with Coulter's flora
Plane Geometry, 1-4 ; Algebra, 3-4	Meyers-Taylor

Labor : $\left\{ \begin{array}{l} \text{Shop, two weeks ; farm, nine weeks, A., I.} \\ \text{Shop, M.} \end{array} \right.$

Military Drill and Physical Culture daily. Rhetorical work two afternoons per week. Readings from American Men of Letters and American Orators three afternoons per week.

Sophomore Year.

FIRST TERM.

Physiology.....	Martin
Book-Keeping, Double Entry.....	Gay
Rhetoric.....	Genung
Algebra and Trigonometry.....	Taylor—Wentworth
Afternoons :	{ Shop, A., I., M.
	{ Library, 1-2; Home Hygiene, 1-2, L.

SECOND TERM.

Physics.....	Deschanel
Physiology.....	Martin
Drawing, A., L.....	Instrumental and Free-hand
Farm Buildings and Roads, A.....	Lectures
Literature, L.....	Kellogg—Library
Solid Geometry, I., M.....	Wentworth
Descriptive Geometry, I., M.....	Waldo
Afternoons :	{ Physiological Laboratory, 1-2.
	{ Physical Laboratory, 1-2.

THIRD TERM.

Physics.....	Deschanel
Agriculture, A.,.....	Lectures
American Literature, L.....	Hawthorne and Lemmon
Algebra, I., M.....	Taylor
Surveying, A., I. M.....	Hodgman
Drawing, L.....	Free-hand
Ethics, A., L.....	Lectures
Descriptive Geometry, I., M.....	Waldo
Afternoons :	{ Physical Laboratory, 1-2.
	{ Surveying, 1-2, A., I., M.
	{ Readings in Literature, 1-2, L.

Military Drill and Physical Culture daily. Rhetorical work one hour per week. Readings from English Men of Letters one hour per week.

Agricultural Course.

JUNIOR YEAR.

FIRST TERM.

Agriculture.....	Lectures
Horticulture.....	Lectures
Physics.....	Deschanel
Landscape Gardening, 1-2; Meteorology, 1-2.....	Lectures
Afternoons: {	Physical Laboratory, 3-5.
	Horticultural Laboratory, 2-5.

SECOND TERM.

Physiological Botany.....	Strasburger
Economic Geology.....	Shaler
Zoology.....	Orton
Zoological Laboratory.	
Afternoons:	Botanical Laboratory.

THIRD TERM.

Recent History.....	McCarthy-Library
Entomology.....	Packard-Lectures
Systematic Geology.....	Dana
Irrigation Hydraulics.....	Lectures
Afternoons: {	Entomological Laboratory, 2-5.
	Farm, 3-5,

Military Drill daily. Rhetorical work one hour per week throughout the course.

Agricultural Course.

SENIOR YEAR.

FIRST TERM.

Chemistry.....	Remsen
Agriculture.....	Lectures
Psychology.....	Hill
Logic.....	Gregory
Afternoons: {	Farm, 2-5.
	Chemical Laboratory, 3-5

SECOND TERM.

Chemistry.....	Remsen
Horticulture.....	Lectures
Agriculture.....	Lectures
Constitution.....	Andrews
Afternoons:	Chemical Laboratory.

THIRD TERM.

Agricultural Chemistry.....	Johnston-Aikman
Political Economy.....	Mill
Recent History.....	Wilson-Library
Sociology.....	Small and Vincent
Afternoons: {	Chemical Laboratory, 1-2.
	Garden, 1-2.

Military Drill daily. Rhetorical work one hour per week throughout the course.

Mechanical Course.

JUNIOR YEAR.

FIRST TERM.

Foundry Practice.....	West
Logic.....	Gregory
Physics.....	Deschanel
Higher Algebra.....	Taylor
Afternoons: {	Physical Laboratory, 3-5.
	Shop, 2-5.

SECOND TERM.

Boilers and Steam Engine.....	Wilson-Holmes
Economic Geology.....	Shaler
Analytic Geometry.....	Wentworth
Drawing.....	Instrumental
Afternoons:	Shop.

THIRD TERM.

Drawing.....	Instrumental
Calculus.....	Taylor
Elements of Mechanism.....	Stahl and Woods
Workshop Appliances.....	Shelley-Rose
Afternoons:	Shop.

Military Drill daily. Rhetorical work one hour per week throughout the course.

Mechanical Course.

SENIOR YEAR.

FIRST TERM.

Drawing	Instrumental
Calculus	Taylor
Chemistry	Remsen
Psychology	Hill

Afternoons: { Shop, 2-5.
Chemical Laboratory, 3-5.

SECOND TERM.

Chemistry	Remsen
Drawing	Instrumental
Strength of Materials	Merriman
Transmission of Power	Lectures

Afternoons: { Chemical Laboratory, 3-5.
Testing Materials, 2-5.

THIRD TERM.

Steam Engineering	Lectures
Special Machines	Lectures
Political Economy	Mill
Recent History	Wilson-Library

Afternoons: Steam Engineering Laboratory.

Military Drill daily. Rhetorical work one hour per week throughout the course.

Irrigation Engineering Course.

JUNIOR YEAR.

FIRST TERM.

Engineering Instruments.....	Baker
Physics.....	Deschanel
Higher Algebra.....	Taylor
Horticulture.....	Lectures
Afternoons: Physical Laboratory, 3-5; Horticulture, 2-5.	

SECOND TERM.

Reservoirs and Dams, 1-2.....	Merriman-Lectures
Hydraulic Construction, 1-2....	Lectures
Analytic Geometry.....	Wentworth
Economic Geology.....	Shaler
Drawing.....	Instrumental
Afternoons: Engineering.	

THIRD TERM.

Irrigation Engineering.....	Wilson-Flynn
Irrigation Hydraulics.....	Lectures
Calculus.....	Taylor
Drawing.....	Instrumental
Afternoons: Engineering.	

Military Drill daily. Rhetorical work one hour per week throughout the course.

Irrigation Engineering Course.

SENIOR YEAR.

FIRST TERM.

Calculus.....	Taylor
Chemistry.....	Remsen
Logic.....	Gregory
Hydrography, 1-2.....	Lectures
Meteorology, 1-2.....	Lectures
Afternoons: Engineering, 2-5; Chemical Laboratory, 3-5.	

SECOND TERM.

Chemistry.....	Remsen
Strength of Materials.....	Merriman
Constitution.....	Andrews
Drawing.....	Instrumental
Afternoons: Chemical Laboratory, 3-5; Testing of Materials, 2-5.	

THIRD TERM.

Hydraulics.....	Lectures
Trusses and Bridges.....	Merriman
Political Economy.....	Mill
Recent History.....	Wilson-Library
Afternoons: Engineering.	

Military Drill daily. Rhetorical work one hour per week throughout the course.

Ladies' Course.

JUNIOR YEAR.

FIRST TERM.

Typewriting.....	Practice
Landscape Gardening, 1-2; Meteorology, 1-2.....	Lectures
Physics.....	Deschanel
Horticulture.....	Lectures
Afternoons: {	Physical Laboratory, 3 5.
	Horticultural Laboratory, 2-5.

SECOND TERM.

Physiological Botany.....	Strasburger
Economic Geology.....	Shaler
Zoology.....	Orton
Typewriting.....	Practice
Afternoons:	Botanical Laboratory.

THIRD TERM.

Entomology.....	Packard-Lectures
Geology.....	Dana
Recent History.....	McCarthy-Library
Stenography.....	Scott-Browne
Afternoons: {	Entomology, 2-5;
	Library in History, 3-5.

Physical Culture daily. Rhetorical work one hour per week throughout the course.

Ladies' Course.

SENIOR YEAR.

FIRST TERM.

Logic.....	Gregory
Psychology.....	Hill
Chemistry.....	Remsen
Philosophy of History.....	Andrews
Afternoons: {	Library in History, 2-5,
	Chemical Laboratory, 3-5.

SECOND TERM.

Chemistry.....	Remsen
Psychology (Applied).....	White
Constitution.....	Andrews
Stenography.....	Scott-Browne
Afternoons:	Chemical Laboratory.

THIRD TERM.

Recent History.....	Wilson-Library
Political Economy.....	Mill
Chemistry of Common Life.....	Johnston
Sociology.....	Small and Vincent
Afternoons:	Library in History and Sociology.

Physical Culture daily. Rhetorical work one hour per week throughout the course.

DEPARTMENTS OF

INSTRUCTION AND LABOR.

AGRICULTURE.

By means of intelligent experimental work, conducted on the College Farm and at the Experiment Station, in which student labor is given a prominent place, a very practical training is given.

The authorities are making every effort to provide a thorough course of instruction in the School of Agriculture, designed especially to educate the students for agricultural pursuits and scientific investigations.

Special agricultural work is begun in the Winter term of the Freshman year. In the Sophomore year, farm buildings and farm roads receive attention. The Spring term of this year is devoted to dairying, with special reference to butter-making.

In the first term of the Senior year, there is further instruction in regard to soils and practical irrigation. A large part of the year is given up to the subject of live stock in its various branches; the care and feeding of horses, cattle, sheep, and hogs; the preparation of food, ensilage, soiling, etc.

In the third term of the Senior year, the students take up the general subject of Agricultural Chemistry, with special reference to the fertilization and cultivation of crops.

The whole course is illustrated by the experimental work always in progress and is supplemented by daily practical work on the farm and in the laboratory.

The four-year Agricultural Course is designed to give to the student a thorough knowledge of the principles and practices of Agriculture, and at the same time to provide enough training in other branches of learning to furnish a well-rounded education that shall fit him for the general affairs of life.

PHYSIOLOGY.

This subject is taught during the first and second terms of the Sophomore year, Martin's Human Body being used as a text-book. Aside from the daily recitations, students spend two hours a day, during the first half of the second term, in the laboratory, to study human and comparative osteology and histology, and to dissect anæsthetized animals, for the purpose of making a careful study of the various organs and tissues.

The laboratory is well-equipped, possessing, among other things, a fine series of mounted skeletons, an expensive manikin (a life-sized model of the human body so dissected as to show nearly every tissue and organ that can be seen in an actual dissection), enlarged papier mache models of the eye, ear, brain, and other important parts; also compound and dissecting microscopes, microtomes, and dissecting instruments.

HOME HYGIENE.

This subject is taught during the last six weeks of the first term of the Sophomore year in the Ladies' Course. Instruction is given in those subjects that have to do with health in the home as, the prevention of disease, micro-organisms and disease, care of the sick, care of the home, care of children, food, clothing, exercise, etc.

ZOOLOGY

is taught in the second term of the Junior year in the

Agricultural Course and the Ladies' Course. This branch of natural science is taught by means of a text-book and actual demonstrations in the laboratory. Each student is furnished with typical forms of the different branches of the animal kingdom, which he studies carefully, making drawings and taking notes. In this manner, the student acquires a practical knowledge of the structure and classification of animals, that he cannot obtain by a mere study of books.

Microscopes, dissecting tools, and all necessary equipments for laboratory work are furnished free, each student being required to care for his own instruments.

ENTOMOLOGY

is taken in the third term of the Junior year in the Agricultural Course, and is taught by the use of a text-book with laboratory work. Each student also gets together and classifies a collection of insects representing all the orders, and follows a few species through all their transformations, taking notes and making drawings and descriptions.

Particular attention is given to the economic features of this study. Those insects known to be injurious are given special attention, and the students are made familiar with their habits and natural histories. Students also prepare the principal insecticide substances and apply them for the destruction of insects.

In connection with this department are a good apiary and honey-house, thoroughly equipped with the most modern appliances, and students so desiring are taught and allowed to put into practice all the manipulations of the apiary.

Students taking this study are required to purchase Packard's Entomology for Beginners.

BOTANY.

The study of Botany begins with the Freshman year. The Fall term is devoted mainly to Structural Botany. The plant as an individual is studied as to its parts or organs—the relation each part bears to the whole—the variations in the parts, and the uses they serve. Roots, branches, buds, leaves, flowers, and fruits are placed in the students' hands, and the technical descriptive terms are learned by applying them directly to the plants.

Gray's Lessons is used as text to supplement the instruction from the plants themselves. A few lectures on classification and the relations of plants to each other are given toward the close of the term.

The Spring term of the same year is devoted to Systematic Botany. Dissecting microscopes and necessary tools are furnished and plants are each day supplied for analysis. Students are taught the application of the principles learned during the first term, so that they may understand the methods of determining the names of plants. The great variety of plants at hand enables the student to become familiar with all the leading natural orders. Written descriptions of the plants analyzed are required. Coulter's Manual of Rocky Mountain Botany is the text-book used.

PHYSIOLOGICAL BOTANY.

In the Winter term of the Junior year, the Agricultural students study vegetable physiology and the minute structure of plants, using as a text-book Strasburger's Practical Botany.

Compound microscopes are supplied and the Botanical laboratory is open to members of the class two hours each afternoon.

An herbarium of native and foreign plants and the green-house furnish material for study.

A portion of this term is devoted to Cryptogamic Botany, special attention being given to rusts, smuts, and mildews injurious to plants.

The laboratory is well equipped with books of reference and with all necessary apparatus and reagents.

HORTICULTURE.

Instruction in Horticulture is given by lectures. The first course of thirteen weeks, in the Fall term of the Junior year, deals mainly with methods. Under the general head of Vegetable-gardening, the principal topics considered are—the best soil and situation for a garden; manner of laying out a garden; irrigation of garden crops; rotation of crops; methods of planting and management; composts and commercial fertilizers; care of tools; construction, management, and uses of hot-beds and cold-frames; harvesting, marketing, and storing vegetables.

Brief historical notes, and full cultural directions, are given concerning all the vegetable plants commonly grown in gardens.

Small fruit culture is next taken up; each kind is considered in detail as to its history, propagation, cultivation, harvesting, marketing, the best varieties, and the diseases to which it is subject.

Then follows a series of lectures upon methods of plant propagation, including a thorough discussion of budding and grafting.

Plants, tools, and other appliances are provided for class-room use in giving practical illustrations of the subject treated.

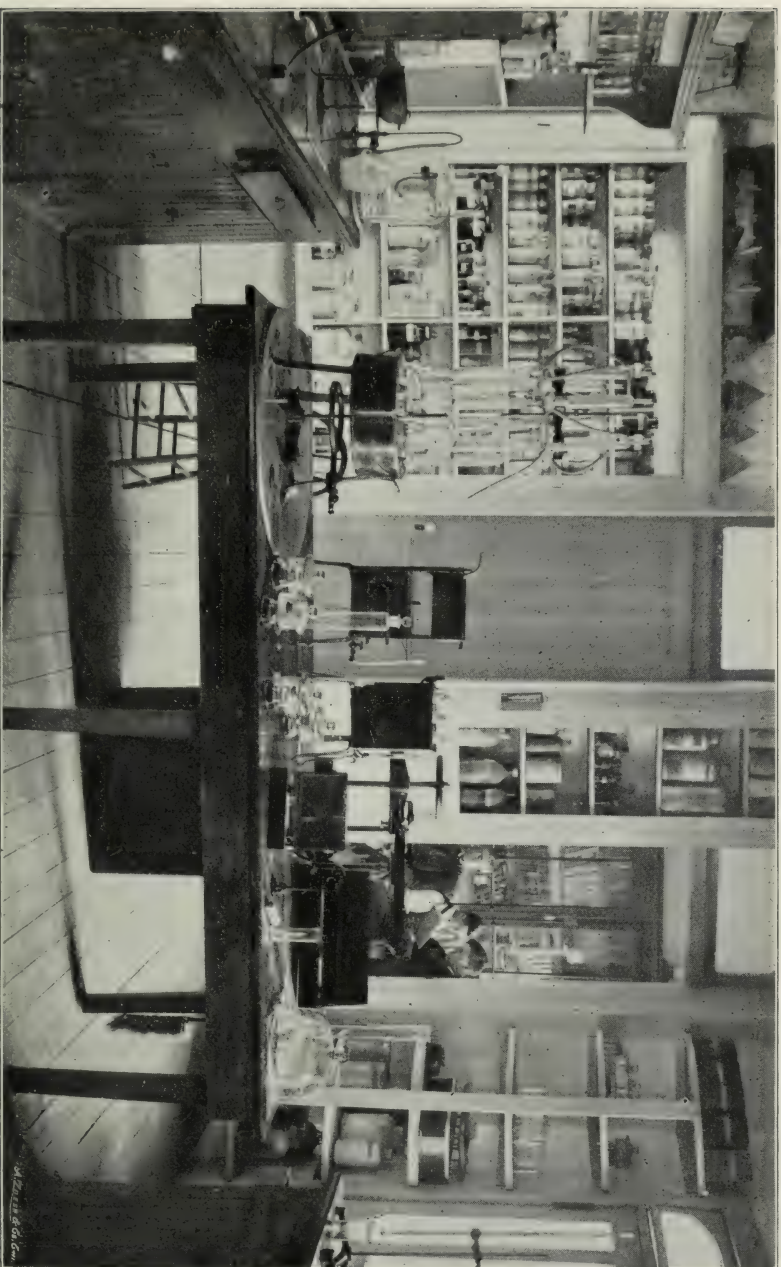
A portion of this term is devoted to Forestry. Lectures are given on the gathering and preservation of forest-tree seed, the planting of seed, and the care of seedlings; on the value of trees for timber and ornament, for hedges, screens, and shelter belts.



AGRICULTURAL HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



CHEMICAL LABORATORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



STATION LABORATORY, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



HORTICULTURAL BUILDING, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.

A second course of lectures during the Winter term of the Senior year treats of the theory of Horticulture, and considers in detail the underlying principles of garden practice; lectures are given upon the history of cultivated plants, variation of plants under cultivation, as influenced by [climate, latitude, altitude, and general surroundings; cross-fertilization and hybridization. Pomology is then taken up, and the theory and practice of orchard management considered in detail.

Floriculture is also treated on such topics as the construction, heating, and management of green-houses, the propagation, cultivation, and management of green-house plants for commerical or private purposes.

LANDSCAPE GARDENING.

One-half of the Fall term of the Junior year is allotted to this study. The general principles of the art are taught by lectures and practical instruction given in the selection and laying out of city and country places. The principal topics are, the selection of a place, the location of buildings, drives, and walks, what to plant and how to plant. The works of Downing and Kemp are used as books of reference.

CHEMISTRY.

It is the object of this department to give the student an opportunity to acquire a thorough mastery of the elementary principles of chemical science. To attain this object, theory and practice are made to go hand in hand. In the first term of the Senior year, the class receives a series of lectures, accompanied by text-book work, upon the general theory of the science, its history and development. In this course of lectures are discussed the subjects of acids, bases and salts, and the principles of chemical philosophy. The natural history, chemical and physical

properties of each of the elements are discussed in detail, the whole being illustrated by experiments. While taking this course, the student spends two hours each day in the chemical laboratory, repeating the experiments shown in the class-room, and making others which may be suggested, thus familiarizing him with the various forms of compounds, the marked distinctions between the different classes of salts, the use of chemical nomenclature, and the manipulation of apparatus. Practice in the use of the blow-pipe accompanies this work, and an insight into determinative mineralogy is thus acquired. The use and application of the spectroscope are also taught. The students in the laboratory at the end of the first term, are examined in the text book and by analysis of *unknown bodies* in the dry way.

In the second term of the Senior year, the Inorganic Chemistry is finished and Organic Chemistry is taken up. The laboratory work continues throughout the term, and the student takes up the tests for the bases and their separation; also, the tests for the acids and their separation. The students are examined at the close of the second term by means of unknown bodies, composed of mixtures of the several groups of bases.

In the Agricultural course, in the third term of the Senior year, the students listen to a course of lectures upon Agricultural Chemistry, in which are discussed such subjects as the following: Relation of Chemistry to Agriculture, the literature of Agricultural Chemistry, elements of plant growth, their relative abundance and importance, the atmosphere, the soil, fertilizers, etc. Storer's Agriculture, Johnson's "How Crops Grow" and "How Crops Feed" are used as reference books. Laboratory work accompanies the lectures and work in the text-books. The study of quantitative analysis begins in the gravimetric way, and,

after some little practice, students will be directed in any line of special work they may desire.

Keeping in mind the object for which the College is founded, we have so planned our Chemical course as to prepare the student for the general application of Chemistry to the industrial arts, while seeking thoroughly to ground him in the application of science to agriculture. A chemical laboratory, fitted up with modern appliances, balance-room, foul-gas room, and desks for thirty-six students, is ready for the classes.

Students have access to the following current chemical literature: *Chemical News*, *Analyst*, *Journal of the Chemical Society*, *Journal für Landwirthschaft*, *Journal of Analytic Chemistry*, and "Fresenius Zeitschrift für Analyt. Chemie."

GEOLOGY.

Recognizing the fact that a knowledge of Geology is one of the foundations of agricultural science, the subject receives corresponding attention. In the second term of the Junior year Economic Geology is taught, Shaler's text-book being used. In the second term of the same year Systematic Geology is taught from Dana's New Text-Book of Geology and by means of lectures. Frequent visits to the mountains and quarries illustrate the practical application of dip, strike, fault, etc. At the close of the work, the students are required to identify and describe twenty-five rocks or mineral specimens.

HISTORY AND LITERATURE.

No education is well-rounded that does not include the study of History and English Literature. These subjects are studied throughout the entire course.

United States History is studied through the greater part of the Preparatory year and includes some work in

American Literature. The study is aided by maps illustrating the periods of maritime discovery, the colonization of the New World, and the history of the United States.

The course in General History and English Literature is as follows:

FRESHMAN YEAR.

First term—Ancient History: Greece and Rome.

Second term—Europe from the Invasion of the Northern Barbarians to the French Revolution.

English Literature to Shakespeare. Readings from Chaucer, Spenser, and Elizabethan prose writers.

Third term—Europe: French Revolution to the present time.

Shakespeare to the present time. Readings from Shakespeare, Milton, Bunyan, Dryden, and later writers.

SOPHOMORE YEAR.

Second term—English Literature.

Third term—American Literature.

JUNIOR YEAR.

Third term—Recent History of America.

SENIOR YEAR.

First term—Philosophy of History.

Afternoons: Readings in History four hours per week in Library.

Third term—Recent History of Europe. Sheldon's General History is used as a text-book. The student is taught to reason about historical events and is required to consult books of reference.

Kellogg's Literature is the basis for the study of English Literature. Each historic period and the authors of

that period are considered together. Class work also includes lectures.

Members of the Ladies' Course engage in a more extended study of English and American Literature.

Each member of the class reads masterpieces from the greatest English writers, makes comparisons between them, and studies style with as much care and thoroughness as possible.

The development of literary taste is the aim of this work. The study of the Philosophy of History includes such subjects as, historical investigation; laws governing human actions; reciprocal influences of religion, literature, and government; comparisons and criticisms of past civilizations; and the elements found in our present European civilization.

A valuable collection of photographs belongs to this Department and illustrates the architecture of the past and present from ruins, and buildings now in existence.

Four cases of historical maps add greatly to the interest in studying history. They include twenty maps from the celebrated presses of W. and A. K. Johnston, Edinburgh, Scotland. These maps illustrate ten periods of European History since the Christian Era, and also include seven maps for the study of Ancient History, and excellent maps for studying United States History.

The College Library is an important factor. Its shelves are well filled with standard literature, and with works of special interest and assistance to the student of history.

ENGLISH AND STENOGRAPHY.

ENGLISH.

The study of English Analysis is pursued during the Fall and Winter terms of the Preparatory course, followed by Word Analysis during the Spring term.

Composition is taught throughout the Preparatory year, the subjects of punctuation, capitalization, structure and arrangement of sentences, and the fundamental principles of style receiving special attention.

During the Fall term of the Freshman year, the subject of Composition and Rhetoric is continued, with Lockwood's Lessons in English for a text-book. It is the object of this work to enable the student to acquire skill in the logical arrangement of his thoughts, and to express them in a clear and effective manner.

Advanced work in Rhetoric is required of the Sophomore class during the Fall term. The laws of mind and language as related to effective discourse, is a subject which receives special consideration.

Composition writing—essays, orations, etc.,—forms an important feature of the entire course in English.

STENOGRAPHY.

Stenography and Typewriting occupy a prominent place in the Ladies' Course.

The object of the work in these branches is to impress upon the mind of the student the importance of a knowledge of the English language and a correct use of the same in business life, as well as to enable him to become an efficient stenographer and typewriter.

A practical course in Book-keeping is given in the Fall term of the Sophomore year.

MATHEMATICS.

The purpose of the instruction offered by this Department is two-fold: First, to give the student clear and exact ideas of magnitudes and their measurement, the principles underlying the methods used, and the general unity pervading the mathematical sciences, or such of them as he has time to become acquainted with; second,

to give him such skill in computation as to enable him to handle easily and satisfactorily the practical problems he is likely to encounter in his after life.

The subjects offered are as follows:

ARITHMETIC

is taught the students of the Preparatory class. The year's work is designed to give a thorough review of the principles underlying the fundamental operations, and to give skill in the application of these to the various problems of business arithmetic.

ALGEBRA

is begun the first term of the Freshman year. The first term's work is designed to give the student as clear ideas as possible of the extensions introduced into the fundamental operations of arithmetic by the notation of two sorts of quantities directly opposed in character, and of the conciseness obtained by the use of literal notation; and to give him sufficient skill in the fundamental operations of Algebra to enable him to solve intelligently simple equations involving one unknown number. Subsequent work acquaints him with the solution of simple equations of several unknown numbers, with involution, evolution, radicals, quadratic equations, and as much more as may be possible in the time allowed to the subject.

GEOMETRY

is taken up as soon as the student is sufficiently acquainted with algebraic methods to apply them intelligently to the computations of this subject. In the two terms allotted to the study it is designed to give the student thorough practice in formal proof by the syllogistic method, to show him the dependence of the entire subject upon the few axioms and elementary concepts derived directly from experience,

and to give him thorough practice in the mensuration of geometric magnitudes. So far as the time and ability of the student will permit, he is practiced upon original exercises.

TRIGONOMETRY

is taught in the first part of the Sophomore year. In the time allotted to this branch, the student is given clear ideas of the trigonometrical concepts, shown their connection, and given considerable practice in the practical application of this branch of Mathematics.

DESCRIPTIVE GEOMETRY

is taught to those students electing the two courses in Engineering. The second and third terms of the Sophomore year are devoted to this subject. The principles of parallel and central projection, of development, etc., are discussed and illustrated in the solution of a great variety of problems, and many of these are accurately worked out on the draughting-board by each student.

From the wide application of Mathematics in all branches of Engineering, those students electing either of the courses having to do with Engineering, pursue the study of Mathematics throughout the entire course, with the exception of the last two terms of the Senior year.

The first term of the Junior year is devoted to a brief review of quadratics and radicals, and to the study of the principal algebraic methods usually denoted by the name Higher Algebra. Among the subjects considered are, Series of various sorts; Mathematical Induction and some of its applications, such as the demonstration of the Binomial Formula; the Theory of Equations; and various methods of solution of equations of the third and higher degrees.

The second term of the Junior year is devoted to the

study of Analytic Geometry. The student is made acquainted with the method of co-ordinates, and the connection between algebraic and geometric forms. The fundamental properties of the conic sections are developed, and as much more of the subject as the time permits.

The last term of the Junior and the first term of the Senior years are devoted to the study of Differential and Integral Calculus. Taylor's Calculus is used as a text-book, and the study is pursued substantially as the subject is there developed. The notion of limits is, however, made the logical basis upon which the subject is developed.

The department is provided with a set of Schroeder models from Darmstadt, for purposes of illustration in the study of Solid Geometry, and with models of warped surfaces, etc. The collection is being added to from time to time. There is a collection of drawings for use in the study of curves and curve-tracing.

MECHANICAL ENGINEERING.*

This course is designed to prepare students for the pro-

*Within the year past the Department of Mechanical Engineering has received the following-named valuable donations to be used for educational purposes:

A complete set of engine, tender, and car brakes, full size, from The Westinghouse Air Brake Co., Pittsburgh, Pa.; a steam pump of modern design from M. T. Davidson, Brooklyn, N. Y.; a complete set of collets and taps for use in drill presses from Beaman & Smith, Providence, R. I.; sets of working drawings of boilers, engines, pumps, launches, gunboats, torpedo boats, etc., from Bureau of Steam Engineering, Navy Yard, Washington, D. C.; an improved water meter from The Thomson Water Meter Co., New York City, N. Y.; specimens of tested steel, steel beams and channels, together with results of laboratory tests by Mr. Millard Hunsiker, from Andrew Carnegie, Pittsburgh, Pa.; specimens of leather link belts from The American Leather Link Belt Co., New York City, N. Y.; specimens showing the manufacture of iron and steel from the ore to the finished product from The Lackawanna Iron & Steel Co., Scranton, Pa.; a steam gauge specially designed for class-room purposes from the Utica Steam Gauge Co., Utica, N. Y.; a steam gauge for illustrative work from The Star Brass Manufacturing Co., Boston, Mass.; and drawings of Root boiler and specimens of spiral pipe from The Abendroth & Root Manufacturing Co., New York City, N. Y.

fession of Mechanical Engineering. It teaches the general principles of engineering and unites theoretical work and practical research to accomplish this end. Instruction is imparted by means of text-books, lectures, illustrations, and experiments in testing materials, machines, and motors.

As the course in Mechanical Engineering is, in part, designed to enable the student to solve those problems relating to the generation and transmission of power and its application to machines, much of his time is spent in the drawing-room, workshops, and experimental laboratory. The studies of this course which are in common with other courses (Mathematics, etc.) are enumerated and described elsewhere in this catalogue; the others are:

Carpentry and joinery; also wood-working machinery.
Pattern making and foundry work.

Forge work.

Machine and vise work in metals.

Principles of mechanism.

Strength of materials.

Boilers.

The steam engine.

Machine design, machinery, and mill work.

Carpentry and Joinery—The class-room work, by means of text-books and lectures, takes up the study of the cutting edge of various wood-working tools and machinery and the means of keeping them in good order; an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out the work, cutting speed of tools, etc.; the shrinkage and warping of woods and the different modes of sawing into lumber and the various forms and uses of framing and other joints.

Pattern-making and Foundry Work are similarly taught. The most advantageous forms of patterns are discussed with regard to the proper distribution of the metal

and best form for molding in the foundry, and, in connection, instruction in core-making and the management of the cupola and brass furnace.

Forge Work, etc., is taught by lectures on iron and steel, and especially with reference to their management in the fire and in the processes of tempering, hardening, and annealing.

Machine Work and Vice Work are taught in a similarly thorough and careful manner.

Principles of Mechanism are studied with reference to the combinations of which machines are composed; and the study of designs for the communication of motion by means of gears, belts, links, etc., forms an important feature of this course.

Strength of Materials is considered by examining the physical properties of the various materials used in construction.

Machine Design is taken up for one term, and the students make designs for various machines and appliances.

Boilers—The various forms are carefully studied from the best authors, and the Department has access to a number of different kinds of boilers upon which actual tests may be made.

The *Steam Engine* is studied in its various forms in general and in detail. The Department has a pair of indicators and all appliances necessary for complete engine tests.

Machinery and Mill Work receive attention, and methods of arranging shops and machinery are investigated; and the transmission of power for shop purposes is studied.

The care and management of shops and the making of estimates are also considered; shop building and appliances receive careful attention.

Attention is called to the combination of the theoretical

and practical instruction here offered. Thorough and careful instruction is given with, or is supplemented by, the most practical application of the same in all ways. In every instance where it is possible the work of the classroom is supplemented by work in a corresponding laboratory, where the experimental work is performed according to the latest and most approved methods with the best machines and materials. The practical applications of mechanical theories broaden the conceptions of these truths and make them easier to grasp and more easily retained; by studying the construction of machines the abstract mathematical laws are better understood and their significance becomes more evident.

The shop instruction is divided into courses, and in each course are given, in connection with the work, an explanation of the construction of each tool and its manner of acting on the material, the methods of determining how to select materials best suited to different kinds of work, the manner of laying out work, cutting speed of tools, etc.

COURSE OF LABOR.

Bench work in wood.....	13 weeks
Wood-turning.....	12 "
Pattern-making.....	12 "
Molding and casting.....	12 "
Iron and steel forging.....	13 "
Machine work in metals.....	12 "
Vice work in metals.....	12 "

BENCH WORK IN WOOD.

This course consists of exercises with the different wood-working bench tools, so arranged in a graded series as to embrace the manipulation of the tools in their various applications.

First—The use of planes in joining, smoothing, and getting the piece out of wind, lining off, and the use of

saws in cutting across and with the grain, and keeping to line.

Then follow exercises in making a halved splice, splayed splice, keyed splice, open dovetail mortise and tenon joint, open dovetail joint, blind dovetail joint, lap joint, dowel joint, small newel post and hand-worked rail, panel door, roof truss, box, carpenter's trestle.

MACHINE WORK IN WOOD.

In connection with this course, with the use of tools, will be given the most rapid and economical method of selecting and preparing the wood for the machine. There will be given examples of straight turning; cutting in and squaring off; concave, convex, and compound curves; handles for chisels and other tools; examples in chuck work in separate and combined pieces; how to turn a ball.

PATTERN-MAKING AND FOUNDRY WORK.

After becoming familiar with bench and machine work in wood, an application of both is made, by constructing patterns with due regard to shrinkage, draft, and the best method of constructing the pattern so that it causes the least amount of trouble in the foundry. There will be given examples of plain work; core work; pulley work; pipe work; gear work; core boxes, their use and construction.

After the patterns and core boxes have been constructed, they are taken to the foundry-room by the students, where molds and cores are made, and castings are made in iron or brass.

In the foundry, the students are taught how to charge and manage the cupola, each student pouring for himself the hot metal for the molds he has made.

The management of the brass furnace and core oven is also taught.

MACHINE WORK IN METAL.

The care and management of the tools, their construction, etc.

Cutting speed of tools and proper angle of cutting edge for different purposes and different metals. Centering and straightening work; straight turning and squaring; boring; making and fitting joints; chuck work; screw cutting, inside and outside; drilling, tapping, and reaming; boring with boring bar and use of center rest; polishing and finishing; hand-tool work.

DRAWING.

Free hand copy and dictation; free-hand model and object drawing; light and shade; geometric problems; orthographic and isometric projections and projection of shadows; development and intersection of surfaces; wood carving, diaper, incised and relief.

PRACTICAL MECHANICS.

For those whose time and means are limited, a short course in practical mechanics is provided. This course covers, practically, the work of the Freshman and Sophomore classes.

The work has for its object a systematic and progressive education in the use of tools and materials, combined with as much theoretical knowledge as may be deemed necessary to explain the principles involved. It does not teach special trades, or manufacture salable articles; to do so would require that the student be kept on the kind of work that he could do best, and thus prevent him from acquiring broad and liberal ideas of other methods. So, without teaching any complete trade, the mechanical principles of many are gained. This does not necessarily mean that the student becomes sufficiently expert to compete with the skilled mechanic, but that a knowledge of *how* a tool or machine should be used, and the *manner of laying out work* for it, are thoroughly taught.

Should circumstances be such as to cause the student to enter manufacturing, his ideas have been broadened by

this training, and he will more readily grasp anything new that may come up in his business, or, should he take up farming, he will with greater ease be able to understand the mechanical principles and workings of his machinery, and know how to keep it and his buildings in proper repair.

MILITARY SCIENCE.

A recent act of the General Assembly of Colorado places the Cadets of The State Agricultural College upon the same footing as regards arms, ammunition, and camp and garrison equipage as the Colorado National Guard.

For instruction in Military Tactics, the students are formed into companies and the companies into an Infantry Battalion with proper Field and Staff.

The system of instruction, being that in use in the United States Army, is calculated to form the habit of prompt obedience, foster the natural martial instinct, and prepare the students, should necessity arise, to organize a company or battalion of our National militia.

The drill includes the School of the Soldier, company and battalion in close and extended order, a thorough course in position, sighting, and aiming exercises, competition with rifle at short ranges, and a series of lectures on castrametation and the art and science of war.

Instruction in Artillery embraces such portions of the United States drill regulations as pertain to the formation of detachments, manual of the piece, mechanical maneuvers, aiming drill, etc. For use in drill, the department has two three-inch rifled field pieces, from the Rock Island Arsenal, and one hundred and fifty cadet rifles, with accoutrements.

Military drill is required of each male student, unless excused for physical disability or by special vote of the Faculty for good and satisfactory reasons. Each cadet is required to purchase a copy of the standard United States Infantry Tactics, for study and reference. He is also to

provide himself with a uniform, modeled somewhat after the uniform of the regular army. It is neat and durable, consists of blouse, pantaloons, cap, and gloves, and costs about eighteen dollars.

In the Fall and Spring terms, a period of forty-five minutes daily is devoted to outdoor maneuvers. During the winter, the new armory is used and a portion of the time is devoted to recitations in tactics and to lectures. When possible, an encampment will be held at the close of the Spring term for practical instruction in guard and field duty.

MILITARY ORGANIZATION.

HARRY D. HUMPHREY, 1st Lieut. 20th Infantry, U. S. Army, Commandant.

BATTALION ORGANIZATION.

STAFF:

J. H. COWEN, Captain and Chief of Artillery.

G. W. NELSON, 1st Lieut. and Adjutant.

HERMAN HOWARD, Sergeant Major.

GRAFTON S. NORMAN, Quartermaster Sergeant.

Company A.

Captain,

HENRY A. CALKINS.

1st. Lieut.,

WILLIAM F. GILKISON.

1st. Sergeant,

RICHARD A. MAXFIELD.

Sergeants,

ABNER S. MCKEE,

R. W. Hawley,

JEAN B. BALCOMB.

Corporals,

SMITH D. PHILIP,

ALLEN P. GREENACRE,

OLOF W. NYBERG.

Company B.

Captain,

EDGAR A. MEAD.

1st. Lieut.,

SETH C. LEWIS.

2nd Lieut.,

HERBERT A. BLACK.

1st Sergeant,

ROBERT W. SEARS.

Sergeants,

WALTER K. STARBIRD,

LOREN B. CURTIS,

FRED ALFORD,

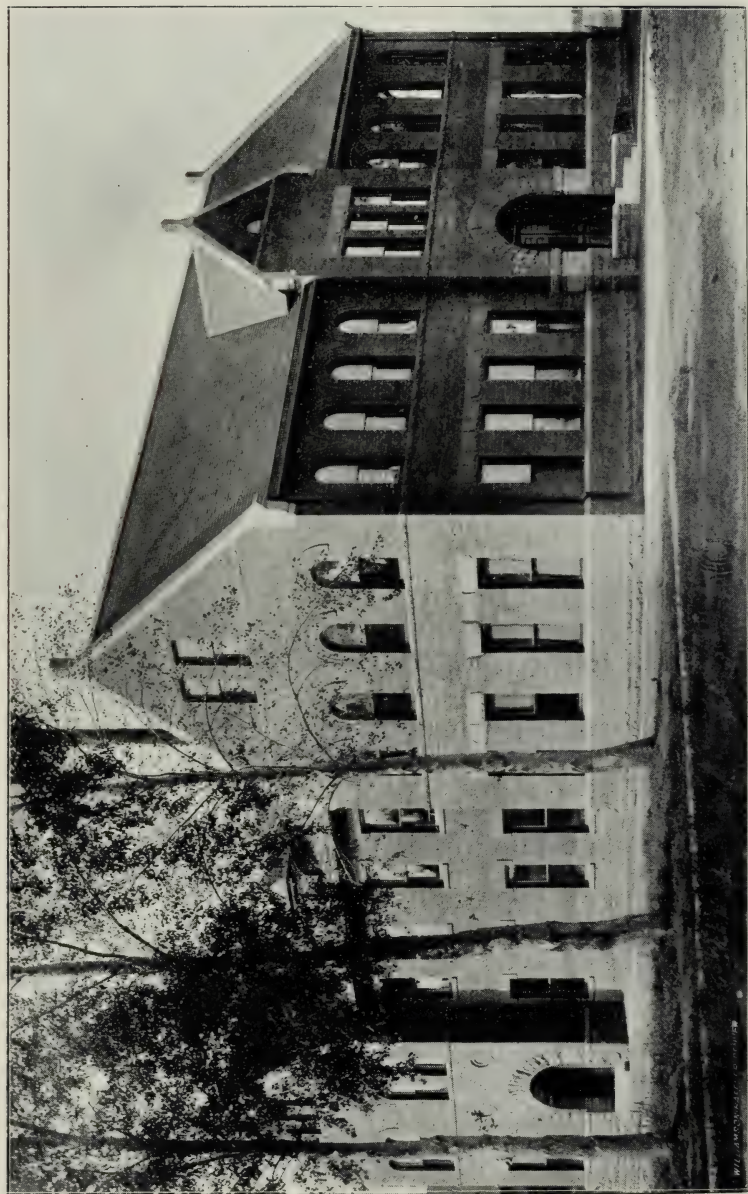
HENRY F. ALPS.

Corporals,

ALFRED H. BUNGARDT,

JAMES M. LOUD,

ARCHIE J. HARRIS.



MECHANIC ARTS HALL, STATE AGRICULTURAL COLLEGE, FORT COLLINS, COLORADO.



MILITARY COMPANIES, STATE AGRICULTURAL COLLEGE, FORT COLLINS,
COLORADO.

PHYSICS.

Instruction in Physics is given for three terms of the Sophomore and Junior years, the course lasting one complete college year. Laboratory work is carried on two hours daily for one-half of each term. The important sciences of Mechanics, Light, Heat, Sound, and Electricity are studied. Special attention is given to the latter subject, both in the class-room and in the laboratory, in view of its increasingly important applications, and as a basis for Electrical Engineering. In the course in laboratory work, the student deals personally with the apparatus described in the text-book, performs experiments for himself, and carries on determinations of the physical constants, or experiments in such ways as will give training and knowledge and greater familiarity with the subjects studied.

The following is a selection from some of the laboratory exercises of the past year:

Exercises in exact measurement with micrometers and spherometers.

Exercises in weighing.

Investigation of the sensibility of the balance.

Testing the parallelogram of forces experimentally.

Determination of the acceleration of gravitation by the pendulum.

Investigation of the temperature correction of an aneroid barometer.

Comparison of thermometers with standard; testing boiling and melting points.

Measurement of heights by barometer.

Determination of difference of potential.

Construction of a working telephone.

Exercises in electric wiring.

Measurement of internal resistance of batteries.

Determination of battery, E. M. F.

Measurement of wire resistance.

Electro-plating.

Determination of densities.

Measurement of candle-power of sources of light, with standard candles.

Determination of focal length of lenses and mirrors.

METEOROLOGY.

A six weeks' course is given in the Fall term. This course includes a discussion of the means of taking observations; methods of exposure of instruments and precautions for taking correct observations; the characteristics of climate, especially that of Colorado; barometry and thermometry; influence of the various meteorological elements upon agriculture and upon plant growth; the study of storm movements from the weather charts, etc. The College and the Meteorological Section of the Experiment Station possess a complete line of meteorological instruments, including self-recording thermometers, barometers, rain-gauges, sunshine recorders, psychrometers, etc. Their records, together with the daily charts of the Weather Bureau, are available for illustration and study in connection with the course.

SURVEYING.

The principles of Land Surveying are taught in the last term of the Sophomore year. This course is intended for all the young men, and includes the study of the methods of the United States land surveys; the location of Government corners; the surveying and platting of land; methods of leveling; and the use and adjustment of the necessary instruments. Work in the field is required for six weeks, and each student is required to make a survey and plat his work. There is also given an elementary knowledge of the measurement of water, and the hydraulic laws relating thereto—such knowledge as is useful to every citizen of an irrigated country, and is expected of every surveyor. A more extended training in this line is given,

in the later years of the course, to those who are taking the work in Irrigation Engineering.

AGRICULTURAL HYDRAULICS.

This course is intended to include a discussion of the general principles of irrigation as practiced in this and other countries; the different methods applied to grass and other crops; the laying out of grounds for irrigation; canals, flumes reservoirs, etc.

The course is intended to be a general one, useful to those connected with agricultural work.

Instruction in the foregoing studies of the Department of Physics and Engineering is given to students in more than one course. In addition, special instruction, extending through a course of two years, is given in

IRRIGATION ENGINEERING.

This instruction is especially designed for those who desire to fit themselves for water commissioners, superintendents, canal superintendents, or who may desire to secure a basis for work as Irrigation or Civil Engineers.

It is the aim of the course to give as thorough ground-work as circumstances will allow in the theoretical and practical knowledge of hydraulics, and of engineering as applicable to the special circumstances of irrigation. The special instruction in Civil and Irrigation Engineering extends through the Junior and Senior years, and covers, principally in lectures, the principles of ditch and canal engineering; reservoir and reservoir construction; fluming; canal structures, as headgates, drops, syphons, etc., both in wood and masonry; theoretical and practical hydraulics; bridge building, trusses, etc. The whole course is accompanied with instruction in draughting and practice in field work sufficient in amount to make the student familiar with instruments and methods. Many of the students do

practical work in the surveying of reservoirs, canal lines, gauging of streams, and other similar work. Where this work is approved, it is accepted in place of assigned exercises.

The Department has a good collection of engineering instruments, including transits, compasses, levels, leveling rods, etc. In the Hydraulic Laboratory are found a large tank and scales for measuring and experimenting on the flow of water over weirs and through orifices of various kinds; current meters of various patterns for stream gauging; water registers for studying the flow of water; water motors, etc. It is also provided with a Fairbanks Cement Tester for testing the strength of cement and a Testing Machine capable of making all tests up to a limit of 50,000 pounds.

There is also available, belonging to the Department and to the Professor of Engineering, collections of photographs and plans of engineering and irrigation structures in Colorado and other States of the Union, as well as in Spain, Italy, France, Algeria, Egypt, India, and Australia. In the present condition of Irrigation Engineering these collections are especially useful.

ENGINEERING INSTRUMENTS.

In the first term of the Junior year, the principles of the instruments used by engineers are taught. Practice with various instruments is designed to give additional familiarity with the use of the level, transit, plane-table, gradienter, stadia, and methods of approximation. Thus a student acquires a knowledge of the peculiarities of the instruments and learns how to handle them accurately and understandingly.

HYDROGRAPHY.

The distribution of water and the sources of water

supply, the relation between areas of basins and the stream discharges, the characteristics of streams, and various computations are carefully considered.

RESERVOIRS AND DAMS.

The principles of the construction of dams, both masonry and earthen, and the computation of their stability are taught; also the economical conditions for reservoirs. The location of a number of large reservoirs near the College and a fine collection of photographs afford means of practical illustration.

HYDRAULIC CONSTRUCTION.

This course is intended to cover briefly the methods of construction to be used where water is an element to be met with, and is made applicable to dams, headgates, bridges, and foundations in general.

IRRIGATION ENGINEERING.

In this course a term is given particularly to the study of canal and reservoir engineering, construction of diversion dams, duty of water, and related subjects. Throughout the whole two years more or less instruction is given which is not indicated in the titles of the studies. The location of the College in the midst of one of the best irrigated valleys in the United States, with its large and well constructed canals and storage reservoirs, gives excellent opportunities for this study. A large collection of photographs and plans of irrigation works elsewhere is in constant use.

In addition to the instruction given in the earlier years of the course in Drawing and in Descriptive Geometry, the students in this course have practice throughout several terms in draughting, where special attention is given to the plans of canal structures, headgates, flumes, drops,

dams, etc. Each student prepares tracings and blue prints from his drawings. As a practical aid, sufficient instruction in the principles of photography is given to enable the student to use it if necessary.

FIELD WORK.

With each course, where possible, practice is given in field work with the instruments. The exercises assigned are designed, first, to give a familiarity with the instruments and the methods of their use, then to give instruction in the laying out of such works as canals, reservoirs, railroads, roads, and in the preparation of the necessary plans and computations.

STRENGTH OF MATERIALS.

This subject occupies one term in the Senior year. It includes the theory of the resistance of materials; calculation of strength of beams, columns, etc. Merriman's *Mechanics of Materials* is used as a text-book.

TRUSSES AND BRIDGES.

Instruction covers one term, and includes the methods of computing and determining, graphically, the stresses in trusses; the principles involved in the construction of trusses; their erection, designing, etc.

ORATORY.

Oratory has been defined as the "Art of influencing conduct with the truth sent home by all the resources of the living man."

The study of the Art of Expression is followed in some form throughout the College course. A healthful interest in the subject has been manifested by all the students.

Our public institutions, our form of popular government, great questions of moral and political moment, the

almost boundless possibilities within the grasp of individual effort, all tend to increase and intensify the interest in, and to emphasize the importance of, this much-needed branch of education.

Few text-books are required in this branch, as copies of the best selections of English prose and verse are furnished the students. This gives a much broader range and scope to the study, and adds an interest to the work not otherwise attained.

Practical rhetorical work is given by the students before audiences every Friday evening. These entertainments are becoming quite popular and tend to encourage the students to faithful work.

PHYSICAL CULTURE

is a part of the work required of all lady students. Much interest has been aroused in the young ladies' classes, and much has been accomplished in grace in movement and ease of bearing, promptness, precision, and strength and vigor.

The plan of measurements now in practice in the very best colleges is followed.

Special physical exercises are marked out as the individual needs of each student require, and results are closely watched.

The College is now better equipped for this work than ever before.

VOCAL MUSIC.

Attendance upon the different classes in vocal music is voluntary. Since the establishment of classes, many students have manifested an active interest in the work. The College Glee Club is an outgrowth of the interest taken in music by some of the students. The degree of proficiency which this organization has attained, in a comparatively short time, is very creditable.

It is the aim of the instruction to give a thorough knowledge of the elementary part of music and some acquaintance with advanced work. Students are taught sight reading and the theory of music; also, they learn something of the biographies of the most eminent composers.

PSYCHOLOGY.

Hill's Elements of Psychology is the text-book in use.

The subject is taught principally by recitations, discussions, and lectures. Much oral work is done in connection with recitations based upon the text. Supplementary reading along the lines of recent investigations is encouraged. Contributions to the science, found on the pages of the best periodicals, supplement the text-book statements. The lives and writings of representative thinkers in the domain of metaphysics afford interesting topics for much oral instruction and library investigation. Something is done to point out the sources whence a knowledge of the history of psychology can be obtained. The relations of the subject to the work of the teacher are pointed out and made themes for study and discussion.

LOGIC.

This study is taught by recitations, discussions, and original exercises. Careful consideration is given to the principles of deductive reasoning. The syllogism is analyzed. The principles and methods underlying scientific investigation are made subjects of study, and the basis of class discussion and essay work. Practical application of what the student learns in the study of Logic is made in testing the validity of arguments and detecting fallacious reasoning.

The history of the science is considered and something learned of the writers whose works thereon have recognized

merit. Gregory's Practical Logic is the text-book used.

POLITICAL ECONOMY.

The text-book in use is Mill's Principles of Political Economy. Access is had to other works, such as Walker's Science of Wealth, Bowen's American Political Economy, Perry's Elements of Political Economy, Gregory's Political Economy, Newcomb's Principles of Political Economy, and Andrews's Institutes of Economics.

The important questions with which the subject deals are treated without attempt to uphold any narrow, one-sided view. Economic questions of particular importance to the people of the United States are given special prominence in the recitations, discussions, and lectures. These are considered from a historic and an impartial standpoint.

CIVIL GOVERNMENT.

The study of the Constitution of the United States and that of the State of Colorado, is an important preparation for the duties of citizenship. An elementary text-book is used by the students in the Preparatory class. Later in the College course, a more thorough consideration of the subject is provided for.

PUBLIC RHETORICALS.

Each student enrolled has at least one public rhetorical exercise each College term, unless excused by Faculty vote. These exercises consist of declamations and recitations for the lower classes and original exercises for the advanced students. The importance of these exercises to the student can scarcely be over-estimated, as every one should have a training which will enable him to present his views upon any question in public in an intelligent and a pleasing manner.

DEGREES.

Upon those who complete the work of any of the four courses in a satisfactory manner, The State Board of Agriculture, upon recommendation of the Faculty of Instruction, confers the degree of Bachelor of Science.

The degree of Master of Science will be conferred upon all graduates of the College who pursue thoroughly, some line of work after graduation, and who submit an acceptable thesis.

The degrees of Civil Engineer and Mechanical Engineer will be conferred upon post-graduate students and others who, by reason of satisfactory work, are entitled to receive them.

THE STATE AGRICULTURAL EXPERIMENT STATION.

The Central Station is located at the College, Fort Collins, Colorado, Larimer County. Five Sub-Stations are provided for, four of which are in operation. They are the San Luis Valley Station, at Monte Vista, Rio Grande County; the Arkansas Valley Station, at Rocky Ford, Otero County; the Divide Station, at Monument, El Paso County; and the Rain-belt Station, at Cheyenne Wells, Cheyenne County. The fifth, located in Delta County, has not yet been put in operation.

This department was created in acceptance of the conditions of the Hatch Act, and the work has been arranged in conformity with its provisions.

Bulletins are issued quarterly, or oftener, and reports annually. The former are distributed to those who request them as long as the editions last.

THE LIBRARY.

The College Library was founded in 1878 by donations

from members of the Faculty and interested citizens, aided by a small purchasing fund derived from the one-fifth mill tax. From this small beginning it has steadily grown in size, and now contains 4,838 bound volumes, and 7,500 pamphlets.

All the books have been selected with great care. The Library contains choice and valuable works on Agriculture; Irrigation, principally by English, French and Italian authors; Mathematics; Physics; Chemistry; Geology; Botany and Horticulture; Physiology; Zoology and Entomology; Mechanics and Engineering; Political Economy; Science of Education; Military Science; General History; English and American Literature; Translations of the Classics; Biography; Travels; etc., etc., etc.

On the shelves are found bound volumes of the following-named periodicals:

Appleton's Journal.	Garden and Forest.
Arena.	Harper's Magazine.
Atlantic Monthly.	Harper's Weekly.
American Naturalist.	Journal of Chemical Medicine
American Journal of Science.	and Veterinary Surgery.
American Agriculturist.	Journal of the Franklin In-
Agricultural Science.	stitute.
American Journal of Forestry.	Journal of the Association of
American Machinist.	the Engineering Societies.
Anthony's Photographic Bul-	Journal of Science and Arts.
letin.	Journal of the Chemical So-
American Meteorological	cietiy.
Journal.	Littell's Living Age.
American Bee Journal.	Nature.
American Garden.	North American Review.
American Architect.	National Live Stock Journal.
Bulletin of the Torrey Botan-	Microscopical Journal.
ical Club.	Magazine of Horticulture.
Botanical Gazette.	Magazine of Western History.
Breeders' Gazette.	Mining Industry and Trades-
Cottage Gardener.	man.
Canadian Entomologist.	Pacific Rural Press.

Chemical News.	Popular Science Monthly.
Country Gentleman.	Princeton Review.
Century Magazine.	Publishers' Weekly.
Contemporary Review.	Public Opinion.
Cosmopolitan.	Rural New Yorker.
Eclectic Magazine.	Scribner's Magazine.
Educational Review.	Scientific Farmer.
Electrical World.	Scientific American and Sup-
Engineering News.	plement.
Eclectic Engineering Maga-	The Microscope.
zine.	The Horticulturist.
Farmers' Advocate.	The Forum.
Farmers' Chronicle.	Wallace's Monthly.
Gardeners' Monthly.	Zeitschrift für Analytische
	Chemie.

Current numbers of the following-named newspapers and periodicals can be found in the Library reading-room :

Agricultural Epitomist.	Greeley Herald.
Agricultural Gazette of New	Greeley Sun.
South Wales.	Greeley Tribune.
Agricultural Science.	Harper's Magazine.
Alliance of the Rockies.	Harper's Weekly.
American Agriculturist.	Highland Chief.
American Architect.	Hoard's Dairyman.
American Creamery.	Index.
American Desert.	Industrial American.
American Gardening.	International Journal of
American Horticulturist.	Ethics.
American Investments.	Irrigation Age.
American Journal of Science.	Irrigation Farmer.
American Machinist.	Journal of the American
American Magazine of Civics.	Chemical Society.
American Meteorological	Journal of the Association of
Journal.	Engineering Societies.
American Microscopical	Journal of Botany.
Journal.	Journal of the Chemical So-
American Naturalist.	ciety (London).
American Society of Civil	Journal of the Franklin In-
Engineers.	stitute.
Analyst.	Journal of Morphology.

- Anthony's Photographic Bulletin.
 Arena.
 Arid America.
 Art Amateur.
 Auk.
 Baltimore Sun.
 Boulder Camera.
 Boulder Herald.
 Botanical Gazette.
 Century.
 Chemical News.
 Chicago Hay Journal.
 Colorado Farmer.
 Colorado Mining Gazette.
 Colorado Woman.
 Coming Nation.
 Contemporary Review.
 Country Gentleman.
 Cosmopolitan.
 Critic.
 Current History.
 Dakota Farmer.
 Delta Fruit Grower.
 Denver Republican.
 Deutsche Botanische Monatschrift.
 Electrical World.
 Elgin Dairy Report.
 Engineering Magazine.
 Engineering News.
 Engineering Record.
 Entomologist.
 Erythea.
 Evening Post.
 Farmers' Advocate.
 Farm and Dairy.
 Farm and Home.
 Farmers' Guide.
 Farmers' Magazine.
 Field and Farm.
 Land of Sunshine.
 Literary Era.
 Loveland Reporter.
 Massachusetts Plowman.
 Meehan's Monthly.
 Meeker Herald.
 Midland Poultry Journal.
 Military News.
 Mirror and Farmer.
 Montrose Enterprise.
 Montrose Press.
 Nation.
 Nature.
 North American Review.
 Pacific Rural Press.
 Physical Review.
 Political Science Quarterly.
 Popular Science Monthly.
 Popular Science News.
 Power.
 Practical Farmer.
 Practical Nurseman.
 Progressive South.
 Proceedings of the Academy of Natural Sciences.
 Proceedings of the American Economic Association.
 Public Opinion.
 Revue Generale de Botanique.
 Review of Reviews.
 Rocky Ford Enterprise.
 Rocky Mountain News.
 Rural New Yorker.
 Safety Valve.
 Salida Mail.
 San Luis Valley Courier.
 Scientific American and Supplement.
 Scribner's Magazine.
 Southern Cultivator.
 Southern Planter.

Fort Collins Courier.	Statesman-Exponent.
Fort Collins Express.	The Industrialist.
Fort Lupton Fact.	Torrey Botanical Club.
Fort Morgan Times.	Twentieth Century.
Forum.	Utah Church and Farm.
Gardener's Chronicle.	Washington Farmer.
Garden and Forest.	Werner's Magazine.
Good Housekeeping.	West American Scientist.
Grand Junction News.	Western Homestead.
Grand Valley Star-Times.	Windsor Leader.
Grange Bulletin.	Zeitschrift fur Analytische
Granite Pay-Streak.	Chemie.

The Library is well-lighted and furnished. It is open from 8 a. m. to 5 p. m. on week days. Students have free access to the shelves. Books may be drawn for a period of two weeks. The Library is catalogued according to the Dewey Decimal system, the author, and title, subject catalogues being complete to date. A comprehensive subject catalogue is now being completed. The cards are neatly and legibly written, and systematically arranged in convenient and accessible cabinets.

COLLEGE ORGANIZATIONS.

LITERARY SOCIETIES.

There are two Literary Societies connected with the College—the “Philo-Æsthesian” and the “Columbian.” Meetings are held weekly throughout the school-year. Students are admitted to these societies by vote of the members. The fees and dues are not burdensome. The “Philo-Æsthesian Society” meets in the College Chapel. “The object of this Society is to encourage free investigation and to promote growth in literary composition with readiness and fluency of speech.” The Spring-term organization was as follows:

W. E. BECKER, President.
H. A. CALKINS, Vice-President.
MABEL BLINN, Secretary.
H. O. BROWN, Treasurer.
R. A. MAXFIELD, Marshal.

ELLA A. MEAD, }
R. A. MAXFIELD. } Programme Committee.
G. W. NELSON, }

“The Columbian Literary Society” meets in Engineering Hall. “This Society is organized to train its members in literary work, to instruct them in parliamentary law, and to promote their growth in general knowledge.” The Spring-term organization was as follows:

A. S. MCKEE, President.
F. T. WOODS, Vice-President.
LULU A. BROOKS, Secretary-Treasurer.
J. B. BALCOMB, Critic.
H. A. BLACK, Sergeant-at-Arms.

ORATORICAL ASSOCIATION.

This Association was organized in 1892. Its object is to encourage the study and practice of oratory in the College. The membership is divided into two classes, i. e., Senior-Junior and Sophomore-Freshman. The officers, at the close of the school-year were as follows:

L. B. CURTIS, President.
R. T. CALKINS, Vice-President.
H. F. ALPS, Secretary.
J. H. COWEN, Superintendent of Contests.

Each of the divisions before named holds a public contest each year. The last Sophomore-Freshman contest took place in the College Chapel, February 15, 1895. Frank T. Woods, of the Freshman class, was awarded first place and Mabel C. Blinn, of the Sophomore class, took second honor. The Senior-Junior contest followed on the evening of February 16th. There were seven contestants.

Frances C. Schelt, of the Senior class, was awarded first place and the gold medal, and Ella A. Mead, a special student classified as a Junior in rhetorical work, was given second rank and the silver medal.

NATURAL SCIENCE CLUB.

This Club was organized by members of the Faculty and students of the College in March, 1889. The object of the organization is to keep its members informed upon recent advances in science; and especially to interest students in scientific subjects and to encourage them in making original observations. Meetings are held monthly and are open to all who can attend. The officers of the Club are,

C. P. GILLETTE, President.

W. W. COOKE, Vice-President.

CELIA M. SOUTHWORTH, Secretary.

CHARLES J. RYAN, Treasurer.

CARL F. BAKER, Curator of Museum.

J. D. STANNARD,	} Programme Committee.
J. H. COWEN,	
P. K. BLINN.	

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The purpose of the local organization is to promote growth in grace and Christian fellowship among its members. It urges aggressive Christian work particularly by and for students. Above all, it strives to point College students to a higher standard of moral excellence. The officers in charge at the close of the College year were:

SMITH D. PHILIP, President.

FRANCIS H. DRONEY, Vice-President.

ROBERT S. GRAY, Recording Secretary.

GEORGE A. SMITH, Corresponding Secretary.

MARK H. FLINN, Treasurer.

P. K. Blinn, W. E. Becker, and S. D. Philip represented the College Y. M. C. A. at the State Convention held in Denver, Colo., April 4-7, 1895.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION.

"The object of the Y. W. C. A. is the development of a higher Christian character in its members, and the prosecution of active Christian work among the young women of the College. It seeks to surround the students with an earnest spiritual atmosphere; to minister to their intellectual, moral, and social well-being; and to promote growth in goodness, purity, and truth."

OFFICERS:

ANNA B. HAWKINS, President.
 CELIA M. SOUTHWORTH, Vice-President.
 LINNIE M. RUTLEDGE, Recording Secretary.
 MYRNA M. DIX, Corresponding Secretary.
 MABEL C. BLINN, Treasurer.

Celia May Southworth was a delegate from the Association to the State Convention held in Colorado Springs, Colo., February 15, 1895.

COLLEGE GLEE CLUB.

D. D. GAGE, Leader.
 H. A. BLACK, Assistant Leader.
 J. H. COWEN, Manager.

A. P. GREENACRE,	{ 1st Tenor.	H. F. ALPS,	{ 1st Bass.
A. H. BUNGARDT,		J. H. COWEN,	
W. E. BECKER,	{ 2nd Tenor,	H. A. BLACK,	{ 2nd Bass.
R. T. CALKINS,		G. W. NELSON,	

WASHINGTON'S BIRTH-DAY.

Each year an organization of the students is formed for the purpose of properly celebrating Washington's Birth-Day. The last celebration was held in the College Chapel, Friday evening, February 22, 1895. The speakers were as follows.

HENRY F. ALPS, President.
 JACOB H. COWEN, College Orator.
 EDITH G. BOOTHROYD, Class of '95.
 R. W. SEARS, Class '96.
 MARTHA R. GILKISON, Class '97.
 HARRY C. MILLER, Class of '98.
 FRANCIS H. DRONEY, Class '99.
 D. V. SICKMAN, Special.

ATHLETIC ASSOCIATION.

This Association was organized in the Fall term of 1892. Its object is to promote the physical well-being of its members and to afford such field practice in athletic games as will enable its chosen representatives to participate with credit in intercollegiate contests. The Association is officered as follows:

ALLEN P. GREENACRE, President.
 ALFRED H. BUNGARDT, Vice-President.
 HENRY F. ALPS, Secretary.
 EDGAR A. MEAD, Treasurer.

COLLEGE PAPER.

In December, 1891, the first number of THE ROCKY MOUNTAIN COLLEGIAN appeared. Since that date the paper has appeared regularly once a month during the College year. The columns of the COLLEGIAN are filled with bright, newsy, instructive matter. The paper is a mirror of student life at the College. It is creditably conducted and is worthy the support of every student, alumnus, official, and patron of the College. The editorial staff is as follows:

EDGAR A. MEAD, '95, Editor-in-Chief.
 HENRY A. CALKINS, '95, Business Manager.
 ELLA A. MEAD, Special, Literary Editor.
 ABNER S. MCKEE, '96, Advertising Editor.
 GRACE FARRAR, '98, Society Editor.
 W. E. BECKER, '96, Local Editor.
 OLIN G. REED, '97, Exchange Editor.

CLASS OF '95 PUBLISHING ASSOCIATION.

This Association was formed to prepare and publish the "SILVER SPRUCE," a publication designed to be a memorial of the Class and to furnish instructive and entertaining "write-ups" of the College and the various College classes. The publication was under the control of a Board of Directors, as follows:

L. B. CURTIS,	EDITH G. BOOTHROYD,
H. A. CALKINS,	J. B. BALCOMB,
E. P. COOKE,	G. W. NELSON,
W. K. STARBIRD.	

CONDITIONS OF ADMISSION.

The College admits students of both sexes, provided they pass a satisfactory examination in the common branches, viz: Reading, Writing, Spelling, Grammar, Arithmetic, and Geography; and provided they are at least 15 years of age.

The work of the Preparatory year is, in part, a thorough review of Grammar and Arithmetic, with the additional subjects of United States History, Civil Government, Physical Geography, Elocution, Composition, Word Analysis, and Drawing.

Candidates for admission should appear for examination on the dates announced on the calendar of exercises, preferably at the opening of the College year. Those entering later, or proposing to take advanced work, must be prepared to take a more thorough and prolonged series of examinations.

EXAMINATIONS FOR ENTRANCE.

Examinations for admission to the Freshman class are as follows.

In *Reading*, candidates must be able to read understandingly, and with proper accent and emphasis.

In *Writing* and *Orthography*, they must be able to write from dictation, sentences from standard pieces of English literature, both prose and poetry, sufficient in number to test their qualifications in Penmanship and Orthography.

Candidates will also be required to pass examinations in *Arithmetic*, *Grammar*, and *Descriptive Geography*.

Candidates for advanced classes or work must be examined on all previous work, or bring certificates of standing from schools having an equivalent grade of work.

Those desiring to enter the Preparatory class must show some knowledge of Grammar, and be examined in Arithmetic, as far as interest, and in Descriptive Geography. They must show a general knowledge sufficient to enable them to take up the work.

Specimen questions follow, so that candidates may gain an idea as to what will be required upon presenting themselves for entrance to the Freshman class.

Similarly thorough examinations will be made for admission to higher classes in all subjects completed by them:

SPELLING.

1. On the MAIN street of this FAIR country VILLAGE stands a little COTTAGE, its THATCHED roof green with moss, its worn, wooden SHUTTERS TIGHTLY closed, and about it that expression of MELANCHOLY common to an ABANDONED HABITATION.

2. It is SURPRISING what SKILLFUL and ARTISTIC EFFECTS they produce with the SIMPLEST of IMPLEMENTS.

3. The CLATTER of SKIRMISHING SWORDS was HEARD on every hand.

4. His PREDICTION had not long to WAIT its FULFILLMENT.

5. It is ADMITTED that this SOLUTION is APPARENTLY INCREDIBLE.

6. The great harbor of Spalato is DIVIDED into SEVERAL MINOR HAVENS, and a SEPARATE SORT OF TRAFFIC is ASSIGNED to each.

7. In the morning THERE was a RELIGIOUS PROCESSION.

8. The DYNAMO, SLOWLY PERFECTED these fifty years, has RENDERED ENORMOUS BENEFITS, and is DESTINED to MUCH FURTHER USEFULNESS.

9. The public-school SYSTEM of AMERICA is not a PUBLIC CHARITY.

10. The STRUGGLE WHICH WAS IMMINENT was for NOTHING less than a new LEASE of NATIONAL life.

ARITHMETIC.

1. Explain reasons for "carrying" in addition and in multiplication.

Subtract 164,739 from 211,624, divide the remainder by 3,367, and explain each step. How may the accuracy of the work be tested?

2. Find what decimal fraction of a section a plat 14 rods by 33 rods, 8 ft., and 3 in. is.

3. Define per cent., percentage, base, and rate per cent.

When the percentage and the rate per cent. are given, how is the base computed?

Five and one-half per cent. on a certain sum of money is \$154. Find the sum?

4. What is the interest on \$1,024 for 97 days at 7 1-4 per cent. per annum?

Explain the process of calculating the value of a note on which partial payments have been made.

5. Define ratio, antecedent, and consequent.

A stone wall 63 feet long and 14 feet high contains 165 perch of stone. How many perch will be required to increase its length 7 feet and its height 18 inches, width remaining unchanged?

GEOGRAPHY.

1. Name the large divisions of land of the Western hemisphere.
2. Name the two largest rivers of the Western hemisphere.
3. Name the great lakes flowing into the St. Lawrence river.
4. What large bay indents the northeast part of the British possessions in North America?
5. Name the capitals of the following States:—Massachusetts, New York, Ohio, Illinois, Nebraska, Wyoming, California, and Texas.
6. Name the large mountain ranges in the United States.
7. Locate the following; China, Japan, India, Australia, Russia, France, and Holland.
8. What large sea lies north of Africa?
9. Locate the following: Black sea, Red sea, and Caspian sea.
10. Name the capitals of the following countries: Russia, Spain, France, China, Japan, and England.

GRAMMAR.

1. What is Grammar? What is a sentence? Name the parts of a sentence, and define each.
2. What is a noun? Classify nouns. What is an adjective? Classify adjectives, and give examples of each class.
3. Parse the words in the following: “Bear ye one another’s burdens.”
4. What is a verb? What is voice? Into what classes is voice divided? Define each class.
5. What is an adverb? Name the classes of adverbs, and define each.
6. Analyze the following sentence: “He that allows

himself to be a worm must not complain if he is trodden on."

7. Give rules for the use of capital letters.
8. Give an example of a complex sentence.

REGULAR AND SPECIAL COURSES.

Unless there are strong and excellent reasons for it, students will not be allowed to take a special course of study; and, in case it is allowed, the student must show that he is well-qualified to pursue the studies selected, by passing such examinations as the Faculty may assign. No student will be allowed to change his course during the progress of a term, or will he be allowed to drop a study unless by permission of the Faculty.

All applications for special courses of study must be made to the Chairman of the Committee on Examinations, by mail or otherwise, at least two days before the opening of the term. Except under unusual circumstances, it will be useless for any person to apply for a special course of study involving less work than is required of the students in the regular courses.

LEAVING COLLEGE.

A student will not be allowed to leave College in term time without leave of absence granted by the President of the Faculty; otherwise the student will be liable to *suspension or expulsion*. Temporary leave of absence can be granted by the President, or the officer in charge during his absence. Final separation from the College must be acted upon by the Faculty.

LABOR.

Labor, two hours each school day, is required of all students not excused for physical disability. This labor (see Course of Study) is performed on the farm, or in the

garden, in the shops and laboratories, in field work, in irrigation, and in surveying and engineering.

DISCIPLINE.

The discipline of the College is administered by the Faculty according to a system of demerits.

Misconduct, in or out of classes, unexcused absences from any required College exercises, meddling with College property, etc., receive one or more demerits, as the case may seem to require. Parents of students who receive ten demerits will be notified of the students' misconduct by the President; twelve demerits suspend, while fifteen expel the student from the College.

GRADES IN WORK AND STUDY.

Each student is expected to maintain a grade of 65, on a scale with 100 as perfect. A student is graded as passed in any study, or branch of manual practice, when the average of his daily progress and his term examination equals 65, on a scale of 100 as perfect.

Failure may be made up, and tested by special examination, or the study may be again taken up with a subsequent class.

MEANS FOR INSTRUCTION AND ILLUSTRATION.

The College Hall, with its new addition, contains large recitation-rooms for the following-named departments: Mathematics, English and Stenography, History and Literature; also, commodious Library and reading-rooms, Museum, Zoological Laboratory and recitation-room, with work-room; also offices for officers of the College, rooms

Board of Agriculture, Faculty, etc. Finally, there is a large and well-arranged Assembly-room, with opera chairs for seating 300 persons; stage, retiring rooms, cloak-room, etc., attached, for the convenience and comfort of

the school and the public. The whole is heated by steam and admirably lighted by electric lights. The basement is heated and lighted, and contains an Armory, 40x72 feet, for purposes of drill and gymnasium, the heating-plant, bath-rooms, rooms for janitor, storage, etc.

The Chemical Laboratory has a lecture-room for forty students; a work or analytic room, with desks for twenty-four students, each desk being supplied with water and gas for the use of each student, and convenient hoods for ventilation; and a Station Laboratory, with balance-room, distillation-room, etc.

The new Horticultural Hall is located on the north side of the campus, facing Laurel Street, and is used by the Department of Botany and Horticulture. It is one of the most thoroughly constructed and artistically designed buildings on the grounds. The ground plan is 52 by 64 feet. It is basement, two stories, and attic in height. The basement, which is composed of Pleasant Valley red sandstone, stands high above grade line and gives excellent rooms for grafting, experimental work, and the storing of implements. The first story of the building has a ceiling height of fourteen feet and is planned to contain one large lecture-room, office, assistant's office, herbarium, and other small rooms for experimental work. The second floor is arranged for a large museum with octagon ceiling; also private laboratories as well as plant, seed, and apparatus rooms. The attic is floored and used for storage of plants and seeds. The superstructure of the building is composed of Boulder pressed brick trimmed with Pleasant Valley red sand stone rubbed to a smooth finish and set flush with the brick work. The general character of the building is after the Romanesque style of architecture, the details, including the moulding and carving, being carried out after the Renaissance. This gives the building a character of solidity, yet with sufficient grace of outline and trimming

to relieve the too massive appearance generally characteristic of Renaissance design. The building is specially designed to characterize the work of this department, there being incorporated in the carving and details designs emblematic of the purposes of the building. The roof is heavily trussed and covered with slate. The building is heated throughout by the best improved system of hot water. The rooms are thoroughly ventilated by modern means and much care has been taken to obtain a thorough sanitary system of plumbing and sewerage. The trimmings throughout are of butternut, finished in the natural wood. The hardware is of solid bronze.

The conservatory attached, 20x50 feet, contains about 200 species, or 1,000 plants, representing many interesting and rare botanical families, and is heated by improved hot-water apparatus.

The orchards and grounds are carefully laid out and planted to ornamental shrubs and trees. Here are the plantation of forest-trees, the kitchen garden, with its many varieties of vegetables and small fruits, hot-beds, and cold-frames.

Agricultural Hall is a very attractive building, constructed of red stone and brick. The entire upper floor is devoted to a spacious hall for class-room work. The first floor is divided into a hallway and four large, comfortable rooms. Here are found the office of the Professor of Agriculture, laboratory, agricultural museum, and seed-room. The basement has four apartments which are used for heating apparatus and storage.

The farm of 240 acres, nearly all under cultivation, includes the experimental ground of about 20 acres, containing three plots, A, B, and C, the first consisting of fifty smaller plots, the second of thirty-three, ranging in size from 1.40 to 1.5 of an acre, and the third of sixteen, containing 1.4 acre each. All are permanently laid with

drives and walks, and have iron stakes lettered and numbered to designate the corners. These permanent corner-stakes are four feet long, of which three and one-half feet are driven into the earth. In addition, there are several plots of one acre each, for larger experiments on the farm.

The live stock consists of Clydesdale grade draft horses, Short-Horn Durham cattle, and Berkshire hogs. Other representative breeds of stock will be added as rapidly as means and accommodations will admit.

The Mechanic Arts Hall includes a large main building two stories in height, and an ell portion one story high.

The machine-shop occupies the first floor in the north end of the building; it is supplied with a fine assortment of apparatus for working the metals. Around the room are benches, with iron vises fitted for the work in filing and chipping; and connected to the main-line shaft are the following high-grade machines: A Gray 6-foot planer, a Brown & Sharp Universal milling machine, with gear, cutting attachments, a Gould & Eberhart 15-inch shaper, a 14-inch and a 17-inch engine lathe, and a speed lathe, a Bickford 20-inch drill, a grind stone, and an emery wheel. In addition, there is supplied a good assortment of gauges, reamers, taps, dies, and other small tools.

At the end of the machine-room is the office and the tool-room. In the tool-room are kept such tools as are not in general use, but which are necessary for special work, or such tools as would become injured or lost if scattered around. By an order, any tool in the tool room can be obtained and used by the students. In the west end of the machine-room, a space is set off for experimental work in the testing of materials, valve-setting, testing by brakes, etc. This testing laboratory is supplied with a testing machine, a 12-horse power Hendley & Meyer engine fitted with a Prony brake, a Blake steam-pump, gauges, thermometers, indicators, etc.

Opening from the machine-room is the engine-room, which is separated from the hall by glass partitions. In this room is the 50-horse power Harris-Corliss engine for running the shops. This engine is supplied with indicator attachment, and the students are given a chance to take and work up indicator cards. For this purpose the department has a pair of Crosby indicators with extra springs. A dead-weight gauge-tester affords a means of correcting steam-gauges.

Opposite the engine-room is the wash-room, with lockers for the use of one hundred students.

Adjoining the wash-room, is the boiler-room, containing the large boiler used to furnish the engines with steam and to heat the building.

The Department of Engineering and Physics occupies the building formerly known as the Dormitory, which has been fitted up for its use.

The main class-room is on the second floor. It has seats for a class of forty-six students. The windows are fitted with shutters, in order that the solar projection apparatus may be used for illustration of topics under instruction. The table is fitted with water-tank and pneumatic troughs. A second room on the same floor is used for storage of the instruments used in class instruction and as a museum of irrigation and engineering appliances. On the first floor are the offices, and the room for carrying on the work of the Section in the Experiment Station.

There is also a draughting-room for the Engineering students.

The basement is taken up with the physical and the hydraulic laboratories, one-half of the area being used for each. In the physical laboratory are firm tables provided for the students, with place for each student, where the apparatus may be left from one day to another without disturbance. A concrete floor, to lessen injurious vibra-

tion, is used to make the room available for the use of delicate instruments.

The hydraulic laboratory has tanks and a large set of suspended scales, weighing 5,000 pounds, for testing the flow of water through orifices and over weirs. Here also is placed the Pelton water-meter and the cement-testing instrument, together with some other portions of the equipment, pipes, pressure-gauges, etc., for experimentation. The experiments on measuring running water in streams are carried on in the adjacent streams.

In Physics, the Department has an excellent working equipment in all branches, the equipment having been selected for its usefulness, and for its adaptability to experimentation as well as for illustration. It includes a set of United States Standard Weights and Measures, prepared for the College under special act of Congress; micrometers; balances; spherometers; gauges; gyroscope; air-pump and accessories; thermometers; mirrors and lenses; projecting lantern; electrical machines; dynamo; batteries; standard B. A. ohm; Queen 100,000-ohm resistance coil; astatic, sine, tangent, and D'Arsonville galvanometers; Edelmann ohmmetre; quadrant; electrometer; voltmeters; telephones; standard cells; and much minor equipment.

For use in Engineering and Hydraulics, it has Colorado, Lallie and Eteley current meters, the latter with an electrical recording attachment; a Darcy-Pitot tube; registers to record the rise and fall of water, one imported from Paris to record, electrically, at a distance of some miles; large scales and tanks for experimentation on the flow of water through orifices and over weirs, and to study the laws of flow; pressure gauges; photographs and plans of hydraulic structures; and a collection of slides for the lantern made from negatives taken in this and other countries. A water-motor, presented to the Department by the Pelton Water Wheel Co., a water-meter, presented by the

Equitable Meter Co., and a centrifugal pump add to the equipment.

In Engineering instruments, it has a Gurley and a Randolph compass; Foster, two Gurley, a Young and a Buff and Burger transits; five levels, including makes of Randolph, Gurley, dumpy and Y levels of Buff and Berger; plane tables of Keuffel and Esser; leveling rods of various patterns; chains and tapes for land surveying and for engineers' use; hand leveler planimeter for determining areas; apparatus for photographic surveying, odometer, etc.

A Fairbanks cement-tester, with full set of molds, gives the means of testing the strength of cements to 1,000 pounds per square inch. A large 50,000-pound testing-machine gives the opportunity to test other materials within its limits.

A complete set of meteorological instruments, many of them imported, is in daily use. This set includes barometers, thermometers, psychrometers, anemometers, statoscope, pluviometers, actinometers, solar and terrestrial thermometers, evaporation tanks, soil thermometers, etc.

The Military Department has one hundred and fifty cadet rifles and two 3-inch rifled field pieces from the War Department. Each year there is issued a supply of ammunition for both branches of service, in order to give training in infantry skirmish drill, target practice, and artillery firing.

The Scientific Department is supplied with a fine cabinet of specimens, illustrating Botany, Entomology, Geology and Mineralogy, Zoology, and Comparative Anatomy.

LOCATION.

The State Agricultural College is located in Fort Collins, Colorado, the county seat of Larimer county, which is one of the most prosperous agricultural counties in the State. The town contains 3,000 inhabitants, and is beau-

tifully situated about five miles from the foothills, and in full view of the Long's Peak and many miles of the Snowy Range. Its supply of water is derived from the melting snows of the mountains; its buildings have electric light; and its sidewalks are exclusively made of excellent flag-stone, which is found in large quarries almost at its doors.

The College is at the south side of town; on either side of the Colorado Central Railroad are its buildings and the farm. Visitors are always welcome. They find the town accessible by four trains, which arrive daily from Denver and other points. With the advantages of pure water, a beautiful location, electric lights, and steam heat, not much is left to be desired. All the surroundings of the College are favorable to the carrying on of the work which it is its mission to perform.

HISTORY.

The origin of the State Agricultural College of Colorado, like that of its sister institutions in other States, dates back to an act of Congress, passed July 2, 1862. Therein it is proposed to endow in the several States and Territories, by grants of public lands, "*a college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislature of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.*"

This act gave the College an endowment of 90,000 acres of land. From this source the College now receives an annual income of nearly \$5,000.

The Constitution of Colorado gives the College an independent existence and a permanent home in Fort Collins. Three citizens of the town donated to the State *two hundred and forty acres of land* whereon to erect the neces-

sary buildings. In 1877, the Legislature provided for the support of the College by levying a tax of one-tenth of a mill on all the taxable property of the State. At this time "The State Board of Agriculture" was created, and all matters pertaining to the management of the College were placed under its control. The one-tenth mill levy was increased, in 1879, to one-fifth of a mill. The present levy of three-twentieths of a mill is by order of the Supreme Court of the State. After the present fiscal year, the one-fifth mill levy will be restored. The corner-stone of the Main College Building was laid July 27, 1878. This building was completed and ready for occupancy early in the following year.

The Legislature, in addition to providing for the support of the College by the mill tax, before named, has made the following named special appropriations:

YEAR.	AMOUNT.	FOR WHAT PURPOSE.
1881.....	\$ 5,000.....	College Dormitory.
1883.....	10,000.....	Mechanic Shop.
1889.....	18,000.....	Extension of Main Building.
1893.....	6,500.....	Sewer System.
1895.....	10,000.....	Additions to Buildings.

The State Experiment Stations are intimately connected with the College, and are under the control of its governing board. These stations, five in number, owe their existence to the acceptance, by the State, of the provisions of the Congressional Act, better known as the "Hatch Act," of 1888. The College receives \$15,000 a year from the Treasury of the United States for the performance of the experimental work required of other stations.

The College also receives support from the General Government under the provisions of an Act of Congress, passed August 30, 1890, known as the "Morrill Bill." The first annual payment from this source was \$15,000. The act provides that this sum shall be increased \$1,000 yearly until it reaches \$25,000, when it shall become permanent.

The annual revenues of the College may be summarized as follows:

1. Land Income Fund, derived from interest on money received from sales of land donated by the General Government, and rents of leased lands not yet sold—\$5,000.

2. "Hatch Act," support of the United States Experiment Stations—\$15,000.

3. United States Fund, "Morrill Bill," in 1894—\$21,000. (This will ultimately reach \$25,000 per annum.)

4. Special Fund, derived from sale of stock, farm products, and the like (estimate based upon the average for four years)—\$1,800.

5. State Tax Fund, three-twentieths of a mill on all the taxable property of the State—\$29,500.

Yearly receipts from all sources—\$72,300.

An inventory, taken in December, 1892, shows the value of the College buildings, grounds, and equipments to be \$197,633.76.

The Experiment Station property, under the control of The State Board of Agriculture, is valued at \$29,797.18.

Prior to 1887, but one course of study was pursued by students. Since that date the course has been uniform up to the close of the Sophomore year, and at that point has been differentiated. The following-named courses, from which students can make choice, all lead to the degree of Bachelor of Science: Agricultural Course, Mechanical Course, Irrigation Engineering Course, and Ladies' Course. There is also provision made for a "Short Course in Agriculture," but no degree is conferred upon those who complete it.

The enrollment of students and the number of graduates, for each year since the opening of the College, are as follows:

ENROLLMENT.

YEARS.	MALES.	FEMALES.	TOTAL.	GRADUATES.
1880....	14.....	11.....	25.....	0
1881....	35.....	22.....	57.....	0
1882....	49.....	32.....	81.....	0
1893....	50.....	31.....	81.....	0
1884....	40.....	37.....	77.....	3
1885....	50.....	46.....	96.....	6
1886....	45.....	42.....	87.....	1
1887....	63.....	42.....	105.....	4
1888....	71.....	38.....	109.....	4
1889....	73.....	34.....	107.....	2
1890....	56.....	18.....	74.....	9
1891....	77.....	29.....	106.....	3
1892....	101.....	45.....	146.....	7
1893....	135.....	44.....	179.....	7
1894....	142.....	56.....	198.....	7
1895....	164.....	66.....	230.....	13

All College fees were abolished in January, 1891. TUITION IN ALL THE REGULAR AND SPECIAL CLASSES OF THE COLLEGE IS FREE. There is no charge of any kind for material used in laboratory work or for books taken from the College Library.

A fair statement of the necessary expenses of a student for the College-year of forty weeks, is as follows:

Board, heat, light, and room-rent.....	\$160 00
Cadet uniform.....	18 00
Laundry expenses.....	20 00
Books, stationery, etc.....	12 00

Total.....\$210 00

Board in private families can be obtained at from \$3.50 to \$4 per week. A boarding club of twenty members reports having good board with lodging accomodation including care of room, fuel, and light at an average cost per member of \$3.00 per week. A few earnest students meet their College expenses by money earned during the school year.

Students who labor on the farm or in the garden receive from 5 cents to 15 cents per hour, according to the quantity and quality of the work performed.

The Library contains 4,839 books and 7,500 pamphlets, and is kept open throughout the year. The will of Mrs. Anna Jones, deceased, gives the College authorities property, valued at \$5,000, which is to be sold and the proceeds used in the purchase of books for the Library.

The College now comprises the following-named departments: Agriculture; Botany and Horticulture, Chemistry and Geology; History and Literature; Mathematics; Mechanical Engineering and Drawing; Military Science; Physics and Irrigation Engineering; Zoology and Entomology; English and Stenography; Elocution and Calisthenics; Logic and Political Economy; Psychology and Civil Government; Civil Engineering; and the Experiment Station.

The work of the College is carried on in strict conformity with a section of the General Laws of the State, which reads as follows:

“The design of the institution is to afford thorough instruction in agriculture and the natural sciences connected therewith. To effect that object most completely, the institution shall combine physicial with intellectual education, *and shall be a high seminary of learning*, in which the graduates of the common school, of both sexes, can commence, pursue, and finish a course, terminating in thorough theoretical and practical instruction in those sciences and arts which bear directly upon *agriculture and kindred industrial pursuits.*”

Calendar of Exercises.

1895-1896.

Entrance Examinations Monday, September 2, 1895
Fall Term begins Tuesday, September 3, 1895
Fall Term closes Wednesday, November 27, 1895
Winter Term begins Monday, December 2, 1895
Holiday Recess begins Friday, December 20, 1895
Holiday Recess closes Saturday, January 4, 1896
Winter Term closes Friday, March 13, 1896
Spring Term begins Monday, March 16, 1896
Baccalaureate Address Sunday, May 31, 1896
State Board of Agriculture meets . Wednesday, June 3, 1896
Commencement Exercises Thursday, June 4, 1896

CALENDAR.

1895-1896.

SEPTEMBER-1895.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER-1895.

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER-1895.

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
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24	25	26	27	28	29	30

DECEMBER-1895.

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JANUARY-1896.

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
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FEBRUARY-1896.

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MARCH-1896.

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22	23	24	25	26	27	28
29	30	31				

APRIL-1896.

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

MAY-1896.

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24	25	26	27	28	29	30
31						

JUNE-1896.

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21	22	23	24	25	26	27
28	29	30				

JULY-1896.

S	M	T	W	T	F	S
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19	20	21	22	23	24	25
26	27	28	29	30	31	

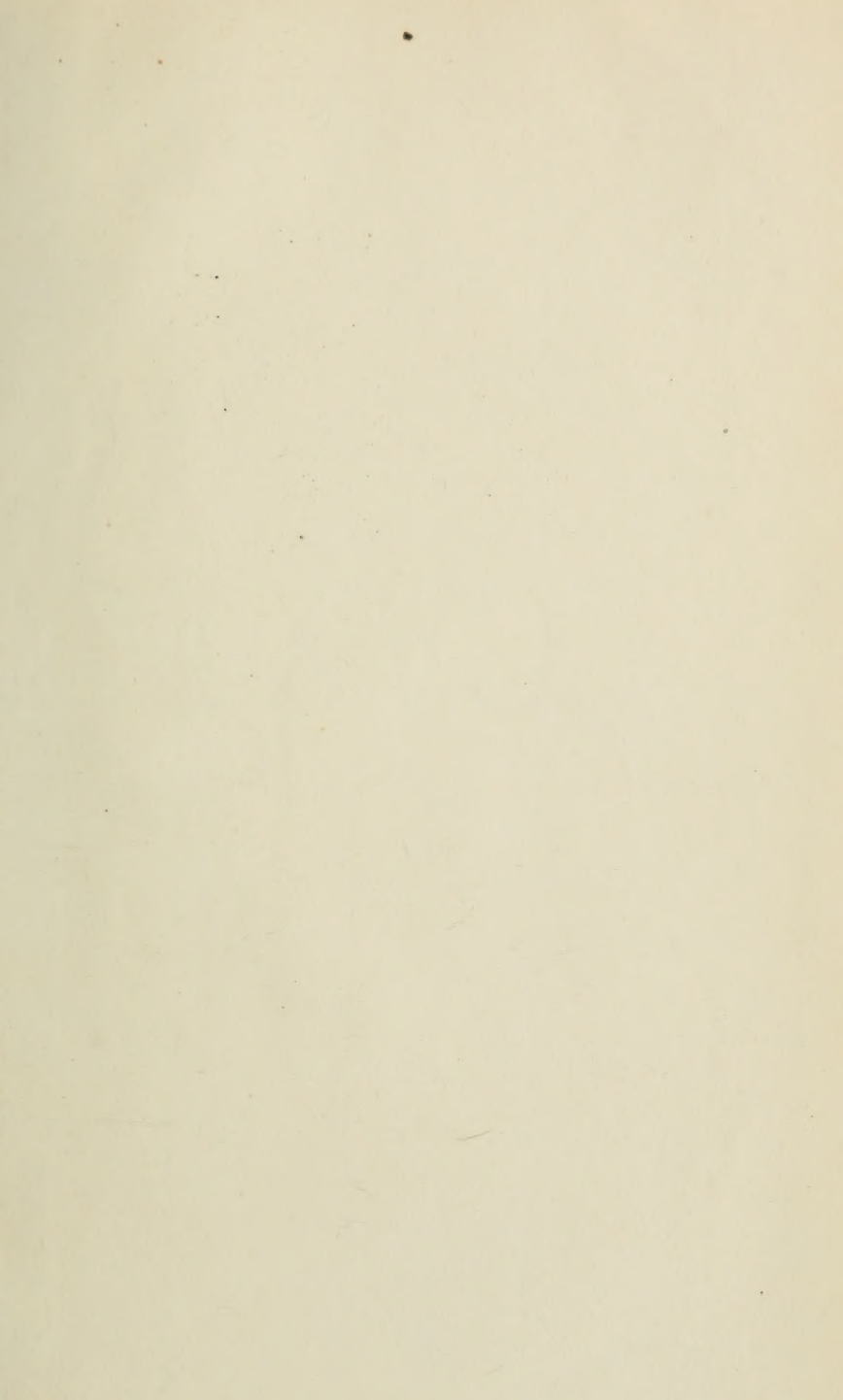
AUGUST-1896.

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30	31					



Table of Contents.

	PAGE.
State Board of Agriculture	2
Officers and Committees	3
Board of Instruction	4
Officers of the Experiment Station	5
Register of Students	6
Summary	13
Graduates	14
Alumni Association	16
Courses of Study and Labor	17
Departments of Instruction and Labor	28
Agriculture	28
Physiology	29
Zoology	29
Entomology	30
Botany and Horticulture	31
Chemistry and Geology	33
History and Literature	35
English and Stenography	37
Mathematics	38
Mechanical Engineering	41
Military Science	47
Physics and Irrigation Engineering	49
Oratory	54
Vocal Music	55
Psychology, Logic, and Political Economy	56
Civil Government	57
Public Rhetoricals	57
Degrees	58
The Experiment Station	59
The Library	59
College Organizations	62
Conditions of Admission	67
Examinations for Entrance	67
Regular and Special Courses	71
Leaving College	71
Labor	71
Discipline	72
Grades in Work and Study	72
Means for Instruction and Illustration	72
Location	78
History	79
Calendar of Exercises	84
Calendar, 1895-1896	85
Table of Contents	86



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